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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

MASIMO CORPORATION,
Patent Owner.

Case IPR2024-00296
U.S. Patent 10,984,911

PATENT OWNER PRELIMINARY RESPONSE

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2054	Excerpts of Apple Watch photographs produced by Masimo as MASITC_01398584-621
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Pursuant to 35 U.S.C. § 313, 37 C.F.R. § 42.107, and the Notice of Filing Date Accorded to Petition (Paper 3), Masimo Corporation (“Masimo”) submits its Preliminary Response to the Petition for *Inter Partes* Review (“IPR”) of U.S. Patent No. 10,984,911 (“’911 Patent”) filed by Apple Inc. (“Apple”).

I. INTRODUCTION

Masimo is the technology leader in the field of noninvasive physiological monitoring. In 1989, Masimo was a small startup operating in an inventor’s condo. Today, Masimo is a publicly traded company employing 6,300 people worldwide with annual revenues exceeding one billion dollars. Masimo technology is used in clinical care to monitor over 200 million patients per year. This growth followed Masimo’s development of a range of technologies that revolutionized the field of noninvasive physiological monitoring. Other Masimo patents have withstood extensive attacks, including in litigation through trials, inter-partes reexaminations, an ITC investigation, IPRs, and appeals.¹

Apple’s Petition arises from parallel litigation in Delaware district court (“Delaware Litigation”). Apple was not, historically, a company that had any

¹ See, e.g., *Mallinckrodt, Inc. v. Masimo Corp.*, 147 Fed. Appx. 158, 2005 WL 2139867 at *3 (Fed. Cir. Sept. 7, 2005); *Masimo Corp. v. Philips Elec. N. Am. Corp.*, 2015 WL 2379485 at *1 (D. Del. May 18, 2015); EX2003 (ITC Commission Opinion); EX2004-2009 (PTAB denials of institution for IPR2022-01271-IPR2022-01276); *Masimo Corp. v. Apple Inc.*, 2023 WL 5921622, at *9 (Fed Cir. Sept. 12, 2023); *Apple Inc. v. Masimo Corp.*, 2024 WL 137336, at *1 (Fed. Cir. Jan. 12, 2024); *Apple Inc. v. Masimo Corp.*, 2024 WL 139570, at *1 (Fed. Cir. Jan. 12, 2024).

involvement in physiological monitoring devices. But, around 2013, Apple decided to enter the field and sought out Masimo for its technology. Despite claiming an interest in integrating Masimo's technology into Apple products, Apple began poaching Masimo's employees, one after another. The poached employees included Chief Technical Officer Marcelo Lamago—an inventor of the '911 Patent challenged here and the three Masimo patents that the ITC recently found Apple infringed. Lamago took Masimo's sensor design knowledge with him to Apple. And in the Delaware Litigation, Masimo accuses Apple's Watches of infringing Masimo's patented technology, including key features disclosed and claimed in the '911 Patent.

The Board should exercise its discretion to deny institution. Because Apple delayed until the one-year deadline to file its Petition, the Delaware Litigation is already at a late stage. The parties and Court have already invested significantly in the Delaware Litigation. And trial preparations will cause that investment to grow by the time of the institution decision here. Further, Apple chose not to provide a *Sotera* stipulation, and in the Delaware Litigation, Apple relies on inconsistent claim construction positions and asserts basically the same primary reference as the Petition. Thus, there are severe concerns about inconsistent results and duplicative efforts. Apple also fails to show any material error during prosecution. Discretionary denial is thus strongly favored under *Fintiv* and *Advanced Bionics*.

Institution should also be denied because the Petition lacks merit. Apple takes inconsistent claim construction positions here and in the District Court and fails to even present patentability challenges under the constructions it asserts are correct in Delaware. Additionally, under any reasonable construction, numerous claim elements are not disclosed and a POSITA would not have been motivated to make the asserted modifications/combinations or reasonably expected such modifications/combinations to succeed. And despite Apple's awareness of the objective evidence of nonobviousness asserted by Masimo in the Delaware Litigation, Apple's Petition fails to address or even acknowledge it.

II. BACKGROUND

A. Masimo's Pioneering Technology

Masimo developed innovative sensor designs that allow more accurate noninvasive measurement of multiple physiological parameters, such as oxygen saturation, carboxyhemoglobin, and more. EX2029, 98:9-102:1. It is very challenging to extract the signal needed for such measurements. *Id.*, 98:9-100:3. Masimo faced difficulties reducing errors in the detected signal, such as the measurement inaccuracies that result when emitted light reaches a detector without being attenuated by the user's tissue. EX2030, 122:1-129:3, 226:16-230:1. The inventors of the '911 Patent discovered solutions to these problems and sought to

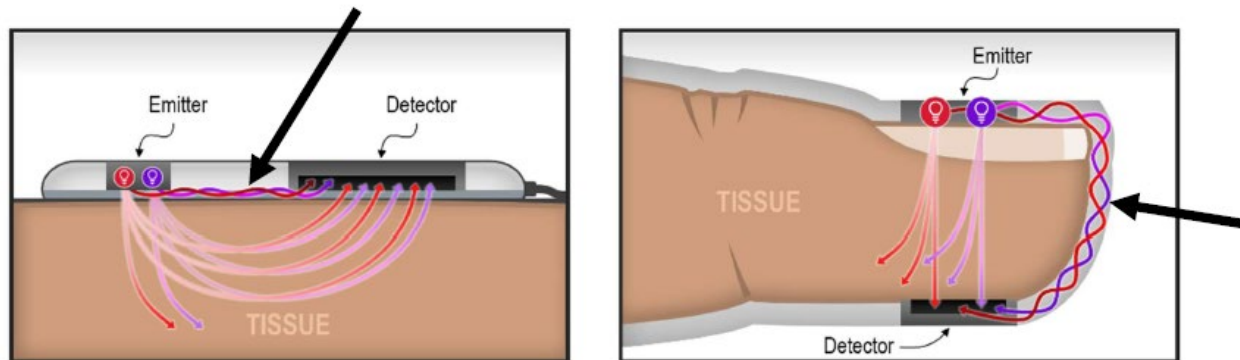
protect their inventions, including those recited in the '911 Patent. *Id.*, 138:9-141:14.

B. '911 Patent Overview

The '911 Patent has an effective filing date of March 1, 2005 and claims devices and methods for noninvasively determining measurements of the user's physiological parameters, such as oxygen saturation and pulse rate. *See, e.g.*, EX1001, cover, 3:23-58, 5:34-51. The claimed inventions result from research conducted by Ammar Al-Ali, Mohamed Diab, and their co-inventors on more accurately measuring multiple physiological parameters. EX2030, 122:1-129:3, 138:9-141:14. The claimed sensor designs include features to measure physiological parameters more accurately in difficult conditions, such as for determining additional parameters and at various measurement locations, including “a finger,” “a foot,” “an ear,” or “a forehead or other tissue surface.” *See, e.g.*, EX1001, 5:66-6:3, 6:42-55, 15:14-23, FIGS. 1, 32, 46, Claims.

For example, the claimed devices and methods determine multiple physiological parameters by utilizing at least three LEDs configured to emit light of at least three different wavelengths, and at least one detector configured to detect emitted light after attenuation by the user's tissue. *See, e.g., id.*, Claims 1, 10, 19. The claimed devices and methods also include a light block that reduces a significant problem encountered by the inventors—light piping. *Id.*; EX2030, 122:1-123:17,

126:7-128:21, 130:23-131:19, 227:18-230:1. Light piping occurs when light goes directly from a light source to a detector without first being attenuated by the user's tissue. *See, e.g.*, EX1001, 6:45-47; EX2002 ¶44. The black arrows in the illustration below show examples of light piping.



Light piping causes inaccuracy in noninvasive physiological measurements because light that reaches the detector without first being attenuated by the user's tissue provides no information about the parameters of the tissue being measured. EX2002 ¶44. Importantly, the claimed devices and methods reduce light piping and improve measurement accuracy by including a light block formed at least partly of black material and having a top with only one opening through which light can reach the detector, with the area of the opening being smaller than the area of the detector. *See, e.g.*, EX1001, Claims 1, 10, 20; EX2002 ¶44. This unique combination of features improves accuracy and provides the ability to measure difficult physiological parameters at a variety of different measurement sites. EX2002 ¶44.

The '911 Patent has three independent claims—Claims 1, 10, and 19.

Claim 1 exemplifies some of the elements at issue (bolded), and recites:

1. A physiological monitoring device comprising:

at least three LEDs recessed into a cavity, the at least three LEDs configured to emit light of *at least three different wavelengths*;

at least one detector configured to detect at least a portion of the light emitted from the at least three LEDs after at least a portion of the light has been attenuated by tissue, the at least one detector configured to output at least one signal responsive to the detected light;

a light block surrounding the at least one detector, the light block comprising a shoebox structure configured to recess the at least one detector into the shoebox structure, wherein the shoebox structure is at least partially formed of a black material, *wherein a top* of the shoebox structure includes *only one opening through which light is configured to pass, the opening comprising an area smaller than a detection surface area of the at least one detector*; and

a processor configured to receive and process one or more signals responsive to the outputted at least one signal and determine a physiological parameter of a user responsive to the one or more signals.

EX1001, Claim 1.²

III. LEVEL OF ORDINARY SKILL IN THE ART

A POSITA at the time of the '911 Patent would be a person with a working knowledge of physiological monitoring technologies and/or optical sensors used in physiological monitoring technologies. EX2002 ¶37. The person would have had a Bachelor of Science degree in an academic discipline emphasizing the design of electrical, computer, software, or optical technologies, in combination with training

² All emphases and annotations are added unless indicated otherwise.

or at least one to two years of related work experience with capture and processing of data or information, or designing and using optical sensors or systems, including but not limited to physiological monitoring technologies. *Id.* Alternatively, the person could have had a Master of Science degree in a relevant academic discipline with less than a year of related work experience in the same discipline. *Id.*

Apple proposes a different level of skill that requires no coursework, training, or experience with optics, optical physiological sensors, or physiology, and focuses on data processing rather than sensor design. Pet. 7. Apple does not, however, contend that the level of skill in the art affects the patentability of the challenged claims. *Id.*; EX1003 ¶¶22-23. While Masimo submits that its level of skill is more accurate, for at least the reasons set forth below, Masimo agrees that the claims' patentability is confirmed regardless of the level of skill.

IV. LEGAL STANDARD

“In an IPR, the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016). An IPR may be instituted only if “the information presented in the petition ... shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a).

A patent claim is unpatentable as obvious only if the differences between the claimed subject matter and the prior art are such that the subject matter, *as a whole*, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. 35 U.S.C. § 103; *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness relies on underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). Furthermore, “the prior art, taken as a whole, must *enable* a skilled artisan to make and use the claimed invention” without undue experimentation. *Raytheon Techs. Corp. v. Gen. Elec. Co.*, 993 F.3d 1374, 1380 (Fed. Cir. 2021).

To prevail on any obviousness ground, it is insufficient to simply identify individual components of the claims in the prior art—one must show why a “skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed.” *In re Kotzab*, 217 F.3d 1365, 1371 (Fed. Cir. 2000). To satisfy its burden of proving obviousness, Apple cannot rely on “mere conclusory statements.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). Rather, it must set forth “some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”

KSR, 550 U.S. at 418-19 (internal citation omitted). An appropriate obviousness inquiry also must be made without any “hint of hindsight.” *Star Sci., Inc. v. R.J. Reynolds Tobacco Co.*, 655 F.3d 1364, 1375 (Fed. Cir. 2011).

Additionally, a motivation to combine references must be “accompanied by a reasonable expectation of achieving what is claimed in the patent-at-issue.” *Intelligent Bio-Sys., Inc. v. Illumina Cambridge, Ltd.*, 821 F.3d 1359, 1367 (Fed. Cir. 2016).

V. CLAIM CONSTRUCTION

The Board should give the claims their ordinary and customary meaning, consistent with the specification, as a POSITA would understand them. 37 C.F.R. § 42.100(b); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (*en banc*). Before the District Court, Masimo explains that the claims have their plain meaning and thus require no construction. EX2031, 57-84. Masimo takes the same position here.

Unlike Masimo, Apple presents inconsistent claim constructions in the parallel proceedings. Before the District Court, Apple argues that the disputed terms require the following express (and narrow) constructions: (1) a “cavity” is a “hollowed-out space” within a one-piece “solid body”; (2) “a light block...” is a “coined term” and thus limited to an exemplary embodiment in the specification; (3) “a top of the [shoebox structure/light block]” mandates a particular device

orientation; and (4) an “opening” requires “empty space” despite being an opening for light. *See id.* Apple relies on these narrow constructions for noninfringement arguments. EX2032 ¶¶473-474, 487-490, 498, 528-539, 512-523. But here, Apple and its expert did not even mention those constructions. Apple’s expert did not even include a section on claim construction in his report. *See generally* EX1003. Rather, Apple now seeks broader claim scope to support the Petition’s patentability challenges by arguing “no express constructions are required.” *Compare id. with* Pet. 7-8. Apple thus violates a fundamental tenet of patent law—the claims “must be interpreted and given the same meaning for purposes of both validity and infringement analysis.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1351 (Fed. Cir. 2001).

As explained below, Apple’s inconsistent claim construction positions warrant denying institution for numerous reasons. *Infra* §§VI-VII.

VI. THE PETITION SHOULD BE DENIED
BECAUSE IT FAILS TO APPLY APPLE’S OWN CONSTRUCTIONS

Apple’s inconsistent claim construction positions here and in the Delaware Litigation warrant denial. The Board’s rules “place an affirmative burden on petitioners to ‘set forth: ... how the challenged claim is to be construed.’” *OrthoPediatrics Corp. v. K2M, Inc.*, Case IPR2018-01548, Paper 9, 10 (March 1, 2019) (quoting 37 C.F.R. § 42.104(b)(3)). “This burden continues by requiring

petitioners to adequately explain “how the construed claim is unpatentable.”” *Id.* (quoting 37 C.F.R. § 42.104(b)(4)).

The Petition fails to satisfy these requirements because it does not explain how the prior art meets *Apple’s* own claim constructions in the Delaware Litigation. Pet. §III. Thus, the Petition should be denied. *See Hologic, Inc. v. Enzo Life Sciences, Inc.*, IPR2018-00019, Paper 17, 6-9 (PTAB Apr. 18, 2018) (“*Hologic*”) (denying institution for failing to satisfy 37 C.F.R. §42.104(b)(3)-(4) because while “Petitioner was free to advocate unpatentability under a claim construction it considered to be correct[,] [i]t did not do so.”); *Jiawei Tech. Ltd. v. Simon Nicholas Richmond*, IPR2014-00937, Paper 22, 7-8 (PTAB Dec. 16, 2014).

Further, Apple had “a duty of candor and good faith to the Office.” 37 C.F.R. § 42.11(a). But Apple never informed the Board about its claim constructions in the Delaware Litigation. *See generally* Pet. This provides an independent reason to deny institution.

Moreover, Apple could not argue unpatentability under its Delaware constructions because the Petition’s references do not meet those constructions, as explained below.

A. Raley Does Not Disclose a “Cavity” Under Apple’s Delaware Construction

Apple argues in Delaware that “cavity” (Claims 1, 10) means “a ***hollowed-out*** space ***within a solid body.***” EX2031, 57. Here, Apple relies on a single

FIG. 3

four LEDs recessed in a cavity

opening/window of a cavity

another cavity in which LEDs are placed

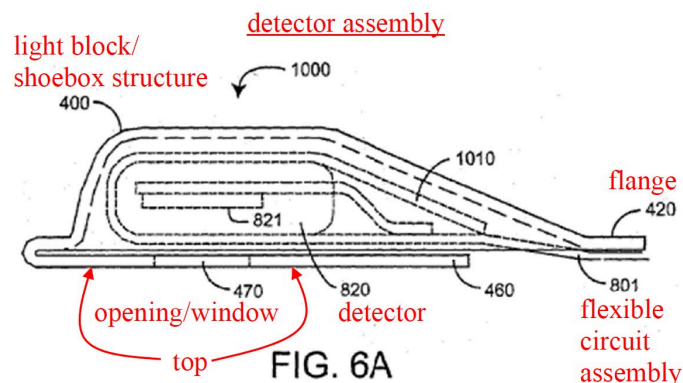
APPLE-1005 FIGS. 1, 3

EX1005, FIG. 3; EX2002 ¶61. And even when Raley's segment (20) and

connector (17) are assembled, the LEDs (21-24) are not recessed into a hollowed-out space *within a solid body* because the segment and connector are separable components. EX1005, FIGS. 1-4, 5:15-23, 5:38-47, 5:57-62, 6:6-12; EX2002 ¶61. Thus, the only reference Apple relies on for this element does not disclose a “cavity” under the construction Apple considers correct. EX2002 ¶61.

B. Abdul-Hafiz Does Not Disclose “A Top...” Under Apple’s Delaware Construction

Apple argues in Delaware that “a top of the [shoebox structure/light block]” (Claims 1, 10, 19) means “the *uppermost* structure that covers the [shoebox structure/light block].” EX2031, 68. Here, Apple relies on a single reference for the “top”—Abdul-Hafiz. Apple argues that Abdul-Hafiz’s *bottommost* “base 460” discloses the claimed “top.”



APPLE-1004, FIG. 6A

Pet. 43, 67-69, 73. Thus, the only reference Apple relies on for this element does not disclose a “top” under the construction Apple considers correct. EX2002 ¶62.

Accordingly, institution should be denied because Apple did not—and could not—present a challenge under the constructions it considers correct. *Hologic*, 8-9.

**VII. THE BOARD SHOULD DENY INSTITUTION
UNDER 35 U.S.C. §§ 314(a) AND 325(d)**

Apple waited until the one-year statutory deadline to file this Petition. In the parallel Delaware Litigation involving the same patent, Apple successfully obtained an accelerated schedule. EX2014 (amended schedule). Under that schedule, the Delaware Litigation has already progressed through fact and expert discovery, dispositive motions, and is ready for trial. Apple fails to explain why it delayed filing this Petition until this late stage of the Delaware Litigation. Because Apple waited so long, institution here would be inefficient and contrary to the goals of the AIA. Apple’s unexplained delay in filing the Petition is one of many reasons why the *Fintiv* factors favor denying institution under § 314(a).

The *Advanced Bionics* factors also favor denying institution under § 325(d) because the Petition merely rehashes the same or substantially the same art and arguments previously presented to the Patent Office and fails to show material error during the ’911 Patent’s prosecution.

A. The *Fintiv* Factors Favor Denial Under § 314(a)

Fintiv sets forth six non-exclusive factors for determining “whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of an earlier trial date in the parallel proceeding.” *Apple Inc. v.*

Fintiv Inc., IPR2020-00019, Paper 11, 6 (PTAB Mar. 20, 2020) (precedential) (“*Fintiv*”). Under those factors, the advanced stage of the Delaware Litigation and significant investment in it support denying institution. Also, Apple’s claim constructions here conflict with its constructions for noninfringement in the Delaware Litigation. Apple also unfairly resurrects references and arguments that it dropped from the Delaware Litigation after obtaining Masimo’s extensive and costly responses to Apple’s invalidity contentions. Rather than streamlining the disputes, the Petition needlessly expands them and creates the possibility of inconsistent decisions. The *Fintiv* factors thus support denying institution.

1. Factor 1: No Stay Has Been Sought and None Is Likely

Apple has neither sought a stay for the ’911 Patent in the Delaware Litigation nor suggested it intends to do so. In fact, Apple *opposed* Masimo’s motion to stay Apple’s patent claims pending Masimo’s instituted IPRs. EX2010. Apple represented that “this case is at a late stage” and Apple seeks “trial *at the Court’s earliest available date.*” *Id.*, 2, 11. Thus, this factor favors denying institution. *See, e.g., Mylan Labs. Ltd. v. Janssen Pharmaceutica NV*, IPR2020-00440, Paper 17, 14 (PTAB Sept. 16, 2020).

Apple mentions a stay for Masimo patents asserted in an ITC investigation. Pet. 95. But that stay (mandated by 28 U.S.C. § 1659) does not encompass the ’911 Patent and is thus irrelevant to this factor. EX1069. And Apple omits that the

ITC determined that Apple infringed Masimo patents and violated 19 U.S.C. § 1337. EX2003, 2-3. Apple also omits that the Board denied institution of IPR for the Masimo patents infringed by Apple. EX2004-EX2009.

2. Factor 2: Under the District Court’s Accelerated Schedule, Trial Is Expected Before The Projected Statutory Deadline

To argue against denial, Apple relies on a “statistically indicated December, 2025 district court trial date.” Pet. 95. But Apple ignores the accelerated schedule that Apple obtained in the Delaware Litigation. EX2011; EX2012, 9:24-10:9; EX2013 (original schedule); EX2014 (amended schedule). And under that accelerated schedule, the Delaware Litigation has already proceeded through fact and expert discovery, dispositive motions, and is ready for trial. *See infra* §VII.A.3. Under that accelerated schedule, trial will likely occur long before Apple’s “statistically indicated” date. Indeed, just three weeks after filing this Petition, Apple represented to the District Court that “*trial will likely occur months before the PTAB issues [FWDs] in [Masimo-filed] IPRs, the first of which is not due until September 20, 2024.*” EX2010, 2. Apple’s arguments about the trial date undermine its statistical approach here and favor denial. *See, e.g., US Venture, Inc. v. Sunoco Partners Marketing & Terminals LP*, IPR2020-00728, Paper 10, 9 (PTAB Oct. 1, 2020); *Supercell Oy v. GREE, Inc.*, IPR2020-01619, Paper 15, 10-11 (PTAB Mar. 24, 2021).

Apple also relies on a Masimo IPR petition that cited time-to-trial statistics. Pet. 95. But Masimo diligently filed that petition at the outset of the Delaware Litigation when statistics were the only timing data available. Indeed, Masimo filed its petition in February 2023—two months before the district court ordered a schedule. *Masimo Corp. v. Apple Inc.*, IPR2023-00634, Paper 1, 108 (PTAB Feb. 27, 2023). Unlike Masimo, Apple filed this Petition on the last possible day, after strategically obtaining fact and expert discovery from Masimo regarding substantially the same primary reference asserted in this Petition. *Infra* §VII.A.4. Under these circumstances, the stage of the case and accelerated case schedule support denial. *See, e.g., US Venture*, Paper 10, 9.

Even if considered, Apple’s generic and outdated statistics (EX1060, 14) should be rejected. The latest statistics show an average time-to-trial of approximately 34.9 months for patent cases in the District of Delaware in the year preceding the Petition. EX2015. Assuming Judge Hall takes over as district court judge in all pending cases she was previously assigned as magistrate judge, she would still preside over approximately 13% fewer cases than the other district judges in Delaware. *See* EX2016; EX2017. Adjusting the time-to-trial based on Judge Hall’s case load (i.e., from 34.9 months to 30.4 months), the expected trial date would occur in May 2025—approximately two months before the deadline for a

FWD here. Thus, the pertinent statistics favor denial. *See, e.g., Vector Flow, Inc. v. HID Glob. Corp.*, IPR2023-00353, Paper 8, 20 (PTAB July 17, 2023).

3. Factor 3: The Parties' Significant and Continuing Investment in the Litigation Weighs Against Institution

The amount and type of work already undertaken in the Delaware Litigation by the parties and District Court dwarfs Apple's investment in this Petition (and even Apple's collection of petitions) by orders of magnitude. At this stage of the litigation, the parties and District Court have completed:

- (1) fact discovery, including producing millions of pages of documents, and responding to approximately fifty interrogatories and dozens of requests for admission per side;
- (2) more than *seventy-five fact depositions*;
- (3) dozens of third-party subpoenas and numerous third-party depositions;
- (4) infringement and validity contentions (including, for the '911 Patent, Apple's 2,145 pages of initial invalidity contentions involving 25 references and Masimo's 96 pages of responsive contentions, as well as Apple's 2,779 pages of final invalidity contentions and Masimo's 99 pages of responsive contentions);
- (5) claim construction (29 pages of briefing on four '911 Patent terms, and four-hour hearing conducted over six months ago);

- (6) expert discovery (33 expert reports comprising 12,000+ pages, including, for validity of the '911 Patent, 205 pages of Apple's expert's opening report, 413 pages of Masimo's expert's rebuttal report, and 209 pages of Apple's expert's reply report);
- (7) more than *twenty-five expert depositions*; and
- (8) more than twenty motions and dozens of hearings, including summary judgment and *Daubert*.³

When, as here, final contentions are complete and fact and expert discovery is closed by the time the Board makes an institution decision, “the third *Fintiv* factor weighs heavily in favor of discretionary denial.” *See, e.g., Roku*, 12; *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 15, 14 (PTAB May 13, 2020) (“*Fintiv IP*”) (level of investment and effort expended in the district court favors denial).

Apple trivializes the parties' investment as shared “equally by both parties.” Pet. 96-97. But the third *Fintiv* factor considers the overall investment in the parallel litigation by the parties and court regardless of whether the parties share that investment. *Fintiv*, 9. Apple improperly disregards the parties' and District Court's investment in the Delaware Litigation. *Id.*

³ Apple refuses to allow confidential information from the Delaware Litigation to be used here.

Incredibly, Apple argues that its “substantial investment *in petitions*...should counterbalance—and frankly *outweigh*—the resources invested in the co-pending District Court litigation.” Pet. 96. But Apple has aggressively litigated the Delaware Litigation with dozens of outside counsel. As an example of the magnitude of its investment in the Delaware Litigation, Apple had seven attorneys argue claim construction and brought so many additional attorneys to the hearing that the courtroom ran out of seats. EX2018, 4:10-14, 3:6-13. Masimo’s investment in the Delaware Litigation also drastically exceeds Apple’s investment in petitions. *See, e.g.*, EX2019 (explaining Masimo’s over \$100M investment in Apple litigation). Apple’s investment in petitions falls far short of the overall investment by Apple, Masimo, *and* the District Court that this factor considers.

Apple also refers to its investment in petitions for the “10 patents asserted” by Masimo in the Delaware Litigation. Pet. 96-97. But this factor considers investment “*related to the patent at issue in the petition.*” *Fintiv*, 9-10. Therefore, Apple’s investment in IPRs challenging *other* patents does not support instituting this Petition.

Further, Apple’s petitions for five of those other patents challenged the “[Masimo] patents reasserted from ITC litigation.” Pet. 96. And Apple omits that it received refunds for eight such petitions because the PTAB did not institute

review. EX2020-EX2027. Apple's unrelated petitions do not support instituting this Petition. *Fintiv*, 9-10.

Apple also ignores the parties' significant investment in the Delaware Litigation related to the same references now re-asserted in Apple's Petition. Apple invested in preparing invalidity contentions based on the same primary reference (Abdul-Hafiz) and one of the same secondary references (Raley) relied on in this Petition. EX2033 (Abdul-Hafiz); EX2034 (Raley). Apple even prepared invalidity contentions based on a primary reference (the Masimo SET pulse oximetry system) that includes the Masimo LNOP ADT sensor, which substantially the same as its primary reference in this Petition. EX2035. Masimo invested in responding to those contentions. *See, e.g.*, EX2036, 186-188 (Abdul-Hafiz), 194-196 (Masimo SET including Masimo LNOP ADT sensor), 218-220 (Raley), 171-177, 270-272. The Petition merely re-asserts Apple's District Court references and arguments, which is not "substantial investment in petitions." *Cf.* Pet. 96.

Apple stipulates it will not pursue in the Delaware Litigation "any ground of invalidity that utilizes any of the prior art asserted in this petition." Pet. 97. Apple argues that stipulation is somehow "broader" than a *Sotera* stipulation. *Id.* But that is incorrect. In a *Sotera* stipulation, a party agrees not to pursue in district court "any grounds that could have reasonably been raised in the petition." EX1061, 7-8. *Sotera* stipulations thus mitigate inefficiency and a risk of conflicting decisions. *Id.*

In contrast, Apple's stipulation preserves for the Delaware Litigation the printed publication-based invalidity contentions that Apple asserts there. EX2028. And Apple could have raised those grounds in this Petition. *Id.* Thus, Apple's narrow stipulation is not a *Sotera* stipulation and does not adequately protect against inefficiency or the risk of conflicting decisions. Apple's stipulation confirms it is pursuing publication-based invalidity challenges here *and* in the District Court.

Apple's stipulation provides nothing beyond the parties' agreement on issue narrowing in the parallel case. In the Delaware Litigation, Apple's initial invalidity contentions relied on the same primary reference (Abdul-Hafiz) and one of the same secondary references (Raley) now asserted in the Petition, as explained above. But Apple has since abandoned its invalidity arguments based on Abdul-Hafiz and Raley. EX2028. Thus, Apple's illusory stipulation imposes no real restriction on Apple and offers no real value to the District Court. Instead, it merely confirms that Apple seeks to enlarge the proceedings by re-raising here the arguments it abandoned in the Delaware Litigation. That sort of inefficiency is contrary to the purpose of IPRs. EX1061, 7.

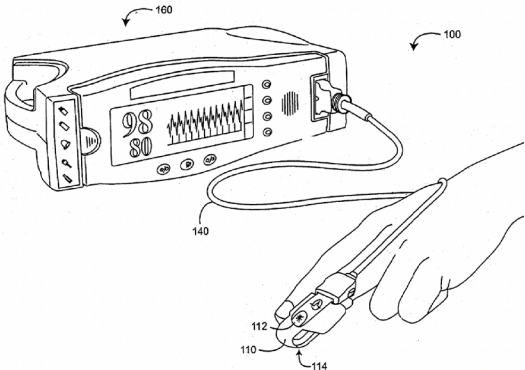
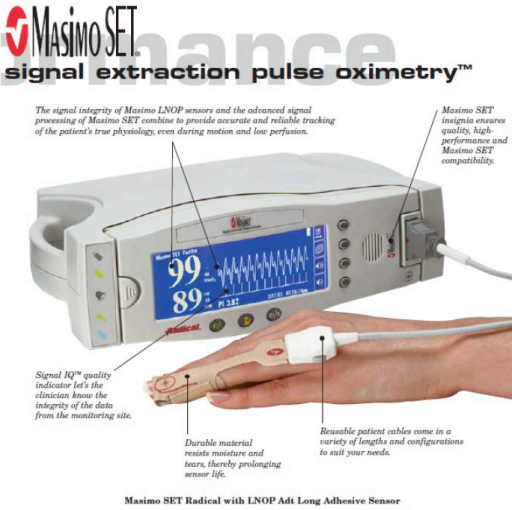
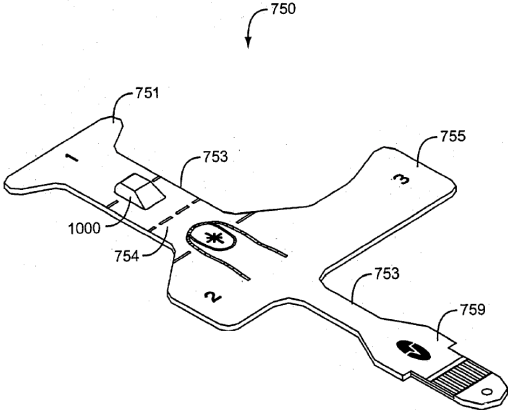
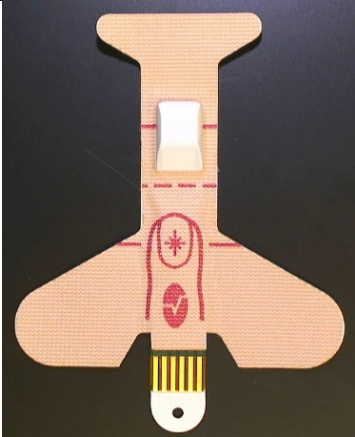
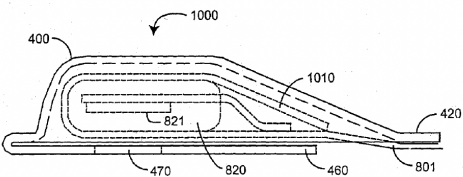
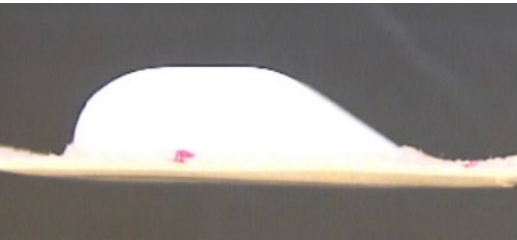
In sum, under the circumstances, the third *Fintiv* factor heavily favors denying institution.

4. **Factor 4: The Validity Issues in the Petition Overlap with the Delaware Litigation**

Apple’s Petition raises validity issues that overlap with the Delaware Litigation. Apple asks both the Board and the District Court to decide validity based on printed publications. *Compare* EX2028 *with* Pet. 1-2. As explained for Factor 3, Apple’s Petition relies on a primary reference and a secondary reference relied on in Apple’s initial invalidity contentions in Delaware. But Apple does not eliminate the overlap in *issues* by electing to rely on other printed publications for its obviousness grounds in Delaware. Rather, Apple seeks to rely on publications here that it abandoned in Delaware. Presumably, Apple abandoned the publications now in its Petition because it believes the other publications asserted in Delaware will be more persuasive there. And recycling abandoned arguments from the District Court does *not* promote efficiency—it needlessly enlarges proceedings.

Concerns of duplicative efforts and inconsistent results are particularly severe here because Apple’s primary reference in the Petition is substantially the same as one of the primary references it has elected to pursue in Delaware. Specifically, in the Delaware Litigation, the “Masimo SET System” is one of Apple’s primary references for challenging the ’911 Patent. EX2028; EX2038. The “Masimo SET System” includes the Masimo LNOP ADT sensor. *Id.* And the Masimo LNOP (low noise optical probe) ADT sensor is precisely what Apple’s primary reference in the Petition (Abdul-Hafiz) concerns. Indeed, Abdul-Hafiz describes and claims the

most pertinent part of the LNOP ADT sensor's design—its low noise optical housing. EX1003, FIGS. 6-7, ¶¶33-41; EX2002 ¶65. As shown below, Abdul-Hafiz's sensor is Masimo's LNOP ADT sensor. EX2002 ¶65.

Abdul-Hafiz (Asserted in Petition)	Masimo LNOP ADT (Asserted in DE)
 EX1004, FIG. 1	 EX2038
 EX1004, FIG. 7C	 EX2039
 EX1004, FIG. 6A	 EX2040

Apple’s Delaware expert relies on Masimo’s LNOP ADT sensor (part of the “Masimo SET System”) as a primary reference, and has shown it is virtually indistinguishable from Abdul-Hafiz’s sensor. EX2037; EX2002 ¶¶66. Masimo’s patent marking website demonstrates this overlap: Abdul-Hafiz issued as U.S. Patent No. 7,096,054 (EX2042), and Masimo’s marking website states the Abdul-Hafiz patent covers the LNOP ADT sensor (EX2043).

Because Abdul-Hafiz and the LNOP ADT sensor are substantially the same references, they both do not disclose or render obvious the claimed inventions for at least the same reasons. For example, both disclose only two LEDs, not at least three, and only two wavelengths, not at least three. EX1004 ¶¶2; EX2002 ¶¶67. And both lack “only one opening [or window] through which light is configured to pass, the opening [or window] comprising an area smaller than a detection surface area” EX1004, FIGS. 6A, 11B; EX2044; EX2002 ¶¶67. Thus, Apple makes substantively overlapping obviousness arguments here and in the Delaware Litigation.

Apple could have waived using overlapping validity arguments in the Delaware Litigation by providing a *Sotera* stipulation here. But Apple did not. *Supra* §VII.A.3. And Apple’s narrow stipulation fails to resolve concerns of duplicative efforts and conflicting decisions between the Board and District Court. *Id.*; see, e.g., *ResMed*, 15.

For at least these reasons, the fourth *Fintiv* factor favors denying institution.

5. **Factor 5: The Delaware Litigation Involves The Same Parties**

The fifth *Fintiv* factor also weighs against institution because the Petition and Delaware Litigation involve the same parties. *See, e.g., Supercell OY v. Gree, Inc.*, PGR2020-00039, Paper 14, 18 (PTAB Sept. 14, 2020).

6. **Factor 6: Other Considerations Favor Denying Institution**

Because the first five *Fintiv* factors favor denying institution, the only remaining consideration is whether the Petition presents a “compelling, meritorious challenge” that meets the “compelling merits” standard. *Roku*, 15; *CommScope Techs. LLC v. Dali Wireless, Inc.*, IPR2022-01242, Paper 23, 5 (Feb. 27, 2023) (precedential) (“*CommScope*”). “The Director defines ‘[c]ompelling, meritorious challenges [as] those in which the evidence, if unrebutted in trial, would plainly lead to a conclusion that one or more claims are unpatentable by a preponderance of the evidence.’” *Roku*, 15. This “compelling merits standard is a higher standard than the standard for institution set by statute.” *CommScope*, 3.

Apple fails to present a compelling, meritorious challenge. Like the petitioner in *ResMed*, Apple now asks the Board to review patentability challenges under “construction[s] it already asserted in district court [are] *wrong*.” *ResMed*, 17.⁴ In the Delaware Litigation, Masimo argued that each disputed term of the ’911 Patent

⁴ The Board has criticized this shifting-sands approach to claim construction as “not being transparent.” *ResMed*, 17.

had its plain meaning and thus required no construction. *Supra* §V. Apple argued Masimo’s constructions were wrong because those terms require narrow express constructions. EX2031, 57-84.

But here, Apple now argues that no terms require construction. Pet. 7-8. And for at least one element of every challenged claim, Apple and its expert argue invalidity solely under “[Masimo’s] proposed construction in the [Delaware] litigation.” *Id.*, 35, 38 (Claim 1), 66, 68 (Claim 10), 72 (Claim 19); EX1003 ¶¶86-87, 90, 129, 132, 143. Therefore, Apple argues under constructions it asserted were wrong in the District Court. And that tactic “undermines [Petitioner’s] argument that the Petition presents a compelling patentability challenge.” *ResMed*, 17.

Apple also does not present alternative arguments in the Petition under its Delaware claim constructions. Pet. §III. As shown above, Apple could not present such a challenge because the Petition references do not meet Apple’s constructions. *Supra* §VI. Thus, institution should be denied because the Petition fails to present a challenge under the constructions Apple argues are correct in Delaware. *Id.*

Under these circumstances, “[the Board] would not be able to determine whether the prior art reads on the claims” under Apple’s Delaware constructions “because the Petition does not provide explanation under [those constructions].” *ResMed*, 17. Apple leaves the Board to navigate between alternative claim constructions that could either lead to inconsistent rulings or finding that the Petition

fails to provide sufficient evidentiary basis to support institution. *See, e.g., id.*, 17-18 (“For this reason, the Petition fails to meet the compelling merits standard, and this factor weighs in favor of [denial].”). Apple’s inconsistent claim construction positions create a serious risk of inconsistent decisions before the Board and District Court. And that “potential for conflicting decisions favors denial.” *ResMed*, 17 (citing *Fintiv*, 12).

Furthermore, the Petition’s primary reference—Abdul-Hafiz—is a Masimo reference concerning the Masimo LNOP sensor. *Supra* §VII.A.4. But the inventions claimed in the ’911 Patent were specifically designed to improve upon the Masimo LNOP line of sensors. EX2030, 227:3-230:1. Thus, unsurprisingly, Abdul-Hafiz is distinguishable from the ’911 Patent’s claims in several key respects and Grounds 1A-1B lack merit for many reasons, as explained below. *Infra* §VIII.

In sum, the sixth *Fintiv* factor also favors denying institution. The *Fintiv* factors weigh against institution—institution should be denied under § 314(a).

B. The Advanced Bionics Framework Favors Denial Under § 325(d)

The PTAB uses the following two-part framework to determine whether to exercise its discretion to deny institution of an IPR under § 325(d):

- (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and

(2) if either condition of the first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.

Advanced Bionics LLC v. MED-EL Elektromedizinische Gerate GmbH, IPR2019-01469, Paper 6, 8 (PTAB Feb. 13, 2020) (precedential) (“*Advanced Bionics*”). Here, *Advanced Bionics* also favors denial.

1. The Same or Substantially the Same References Were Presented to the Office

Apple’s three Petition references were presented to and considered by the Patent Office during the ’911 Patent’s prosecution. EX1002, 245 (#564: patent issuing from Abdul-Hafiz), 235 (#273: Raley), 228 (#78: Secker). This satisfies part one of the *Advanced Bionics* framework. *Advanced Bionics*, 7-8 (“Previously presented art includes ... art provided to the Office by an applicant, such as on an Information Disclosure Statement (IDS).”).

2. Apple Has Not Met Its Burden to Show Any Material Error

Apple has the burden of demonstrating material error, *Advanced Bionics*, 8-10, but fails to meet that burden.

First, Apple argues “the Examiner committed material error by failing to appreciate that independent claim 10 does not require ‘only one opening’ and independent claim 19 does not require that the light block be ‘formed of a black material’ and does not require a ‘window comprising an area smaller than a detection

surface area” Pet. 90-91. But the Examiner did not fail to appreciate differences in claim language. Instead, the Examiner simply provided one generalized list of claim elements not disclosed by the prior art, only some of which apply to a given independent claim. EX1002, 319-320.

Additionally, none of the claimed features Apple identifies (Pet. 91) were the reason for allowance of any claim. Rather, the prosecution history shows that the Examiner allowed the claims because the “the combination of Schulz et al. in view of Thomas et al. fails to disclose” numerous “light block” features “in combination with the remaining claimed features.” EX1002, 314-320. Thus, Apple’s identification of differences in claim language is immaterial because no one element was the reason for allowance of any claim.

Further, even if Apple were somehow correct that the Examiner did not appreciate differences in claim language (it is not), Apple fails to show any material error. For example, Claim 10 does not require “only one opening” but does require a “window comprising an area smaller than a detection surface area,” which is an element that the Examiner found was not disclosed. EX1002, 319-320. And Claim 19 does not require a “window comprising an area smaller than a detection surface area” but does require “only one opening,” which is another element that the Examiner found was not disclosed. *Id.*, 310.

Moreover, Apple does not argue or show that the combination of Schulz and Thomas disclosed any of the elements that the Examiner found were not disclosed. Pet. 90-92. Thus, nothing in the Petition contradicts the Examiner’s conclusion about the patentability of the claims.

Second, Apple argues that the Examiner committed material error “by not applying Abdul-Hafiz in the manner set forth in the Petition.” Pet. 91-92. That is, Apple presumes its Petition shows unpatentability. But Apple is incorrect, because the Petition fails to demonstrate unpatentability for the many reasons explained herein. *Infra* §VIII. Thus, the Examiner “not applying Abdul-Hafiz in the manner set forth in the Petition” is not material error at all.

Accordingly, because Apple’s Petition relies on the art previously presented to the Office and unambiguously fails to show any material error, the Petition should be denied under § 325(d). *Advanced Bionics*, 8-9 (if both conditions are met, “the Director generally will exercise discretion not to institute [IPR]”).

VIII. NO GROUND ESTABLISHES OBVIOUSNESS

The Petition does not establish a reasonable likelihood of Apple successfully showing any challenged claim would have been obvious to a POSITA. Apple’s grounds—Grounds 1A-1B—fail for many reasons. The following table summarizes the independent reasons for denying all grounds for all claims:

Independent Reasons for Denial of All Grounds for All Claims	Section
The Petition Fails to Apply Apple’s Own Constructions	§VI
The Board Should Discretionarily Deny Institution Under § 314(a)	§VII.A
The Board Should Discretionarily Deny Institution Under § 325(d)	§VII.B
Apple’s Analysis Is Driven by Hindsight and Fails to Treat the Challenged Claims as an Integrated Whole	§VIII.A
Apple Fails To Establish Any Reference Discloses the Claimed Light Block	§VIII.B
Apple Fails to Establish that a POSITA Would Have Been Motivated to Modify Abdul-Hafiz to Have Only One Opening or a Smaller Opening/Window or Reasonably Expected Such Modifications to Succeed	§VIII.C
The Prior Art Did Not Enable Measuring Carboxyhemoglobin and Methemoglobin By Combining Abdul-Hafiz’s Pulse Oximeter with Raley as Proposed	§VIII.D.1
A POSITA Would Not Have Reasonably Expected the Proposed Combination of Abdul-Hafiz with Raley’s Interconnect Cable Segment/Connector to Succeed	§VIII.D.2
A POSITA Would Not Have Been Motivated to Combine Abdul-Hafiz With Raley as Proposed	§VIII.D.3
Apple’s Failure to Inform the Board of—Much Less Address—Known Objective Indicia of Nonobviousness Warrants Denying Institution	§VIII.E

A. Apple’s Analysis Is Driven by Hindsight and Fails to Treat the Challenged Claims as an Integrated Whole

The Petition treats the challenged claims as mere lists of disparate parts, disregarding the part-to-part relationships that give the claims their meaning. For both grounds, Apple’s analysis begins by describing the challenged claim elements allegedly found in the asserted references. Pet. 8-14, 74-76. That is, Apple improperly “break[s] [each] invention into its component parts, then find[s] a prior art reference [allegedly] corresponding to each component.” *Princeton Biochemicals, Inc. v. Beckman Coulter, Inc.*, 411 F.3d 1332, 1337 (Fed. Cir. 2005). The Federal Circuit has cautioned against this hindsight-driven approach of “using the invention as a roadmap to find its prior art components.” *Id.*

Completely unhinged from any proper analysis, Apple then describes the “combination” structure it contrived using the challenged claims as its guide: “Abdul-Hafiz+Raley’s pulse oximetry system” (Pet. 14-15) and “Abdul-Hafiz+Raley’s emitter assembly modified in view of Secker” (*id.*, 76-79). Apple starts with the claims and works backwards to cobble together each claim feature into combinations, *id.*, but “[t]his type of piecemeal analysis is precisely the kind of hindsight that the Board must not engage in.” *In re NTP, Inc.*, 654 F.3d 1279, 1299 (Fed. Cir. 2011). Accordingly, Grounds 1A-1B fail because Apple’s analysis is based on impermissible hindsight. *See, e.g., id.* (“Care must be taken to avoid

hindsight reconstruction by using ‘the [challenged patent] as a guide’”) (internal citation omitted).

Apple tries to glue its analysis together by arguing, on a part-by-part basis, that a POSITA would have been motivated to combine Abdul-Hafiz embodiments with other references as needed to yield *claim elements* satisfied by its “Abdul-Hafiz+Raley combination” device (Pet. 15-20) and its “Abdul-Hafiz+Raley+Secker combination” device (*id.*, 79-86). Apple thus attempts to bypass the statutory requirement to consider the claimed invention “as a *whole*”—a requirement that helps protect against exactly this hindsight by “*prevent[ing] evaluation of the invention part by part.*” *Princeton Biochemicals*, 411 F.3d at 1337. As a result, Apple’s obviousness arguments for Grounds 1A-1B fail because they are driven by hindsight. Apple merely argues reasons supporting the construction of the combination devices it fabricates using the challenged claims as its map (Pet. 15-20, 79-86)—i.e., improper reasons for combining its references “in the right way so as to achieve the [elements] of the [challenged claims].” *NTP*, 654 F.3d at 1299 (internal citation omitted).

Accordingly, Apple has not established a likelihood of success on Grounds 1A-1B because of the impermissible hindsight underlying its arguments.

B. Apple Fails To Establish Any Reference Discloses the Claimed Light Block

The independent claims recite a “light block [at least partially] surrounding the at least one detector” with numerous additional requirements.

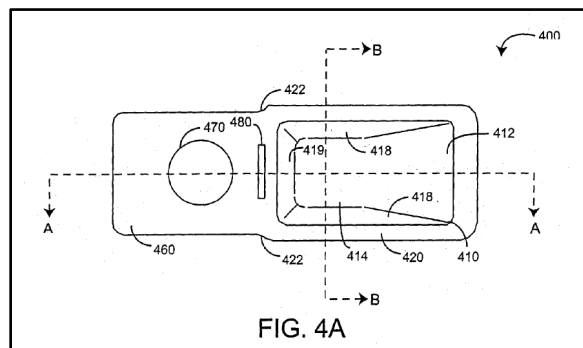
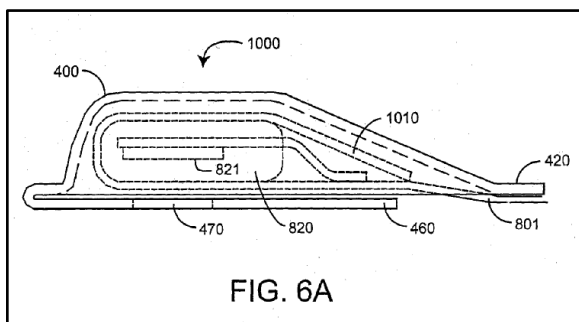
- Claims 1 and 19 require that the “light block” has “only one opening through which light is configured to pass” to the at least one detector
- Claims 1 and 10 require that the “opening” (Claim 1) or “window” (Claim 10) has “an area smaller than a detection surface area of the at least one detector”

But as explained below, Abdul-Hafiz does not disclose either requirement of the light block, nor would a POSITA have been motivated to implement either feature in Abdul-Hafiz’s sensor. Grounds 1A-1B fail for these reasons.

1. Apple Fails To Establish Any Reference Discloses a Light Block with “Only One Opening” (Claims 1, 19)

Abdul-Hafiz’s sensors include an optical housing (400) with an aperture (470) aligned with the photodiode (821) of the enclosed detector (820), as shown below.

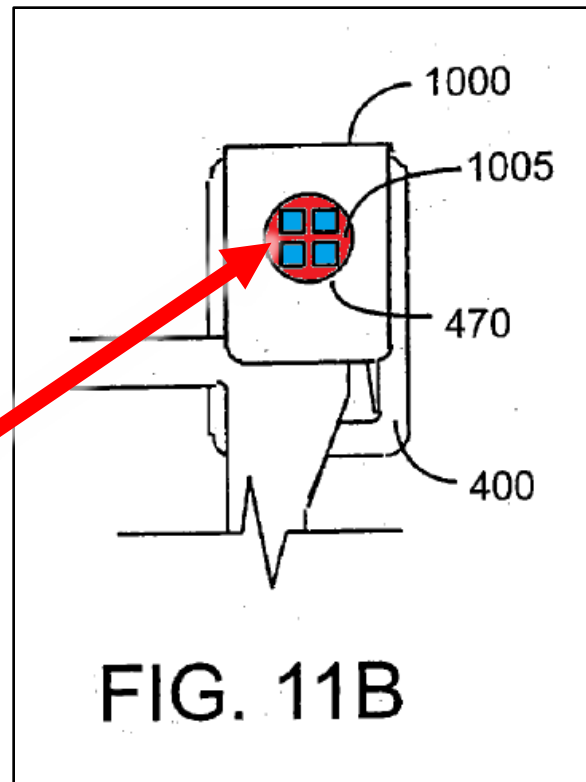
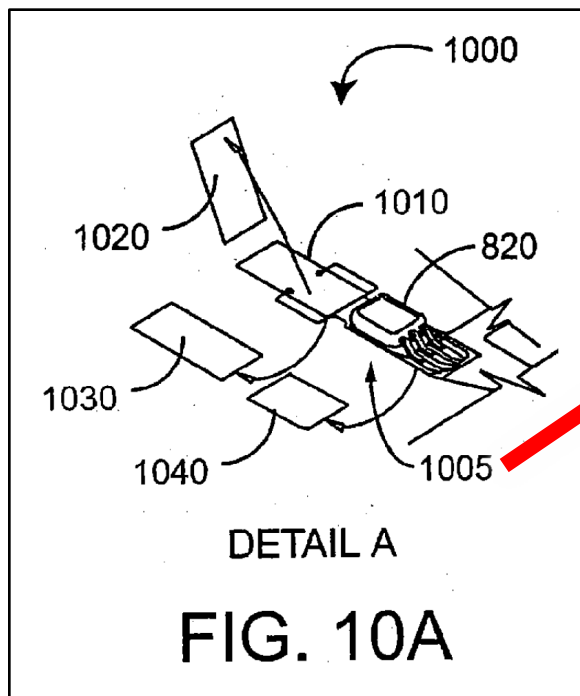
EX1004 ¶¶ 37, 39, FIGS. 4, 6; EX2002 ¶70.



EX1004, FIGS. 6A, 4A. Apple relies on optical housing (400) as the alleged “light block” and aperture (470) as the alleged “only one opening” in its grounds. Pet. 35-43, 72-73.

Apple’s argument fails because Abdul-Hafiz includes more than “one opening.”⁵ Indeed, Abdul-Hafiz’s alleged light block includes four openings. The optical housing (400) includes an EMI shield (1010). EX1004 ¶39, FIG. 6A; EX2002 ¶71. The specification explains that EMI shield (1010) has a fixed shield (1005) with four openings. EX1004 ¶47; EX2002 ¶71. Specifically, Abdul-Hafiz’s assembled neonate (700) and adult (750) sensors “incorporate[] a detector assembly 1000 (FIGS. 10A-C), described below, including a low noise optical housing 400 (FIGS. 6A-B), as described above.” EX1004 ¶¶40-42, FIGS. 7, 9; EX2002 ¶71. That optical housing (400) also includes a foldable EMI shield (1010) described with reference to FIGS. 10A-C as “also enclos[ing] the detector 820,” as shown above (left) in FIG. 6A. EX1004 ¶39, FIG. 6A; EX2002 ¶71. The EMI shield (1010) includes a fixed shield (1005), as shown below (left).

⁵ Apple also relies on the ’911 Patent itself to support its argument that Abdul-Hafiz discloses a light block with “only one opening.” Pet. 43-44. Apple’s reliance on the ’911 Patent reveals its impermissible hindsight analysis. *In re NTP, Inc.*, 654 F.3d 1279, 1299 (Fed. Cir. 2011).



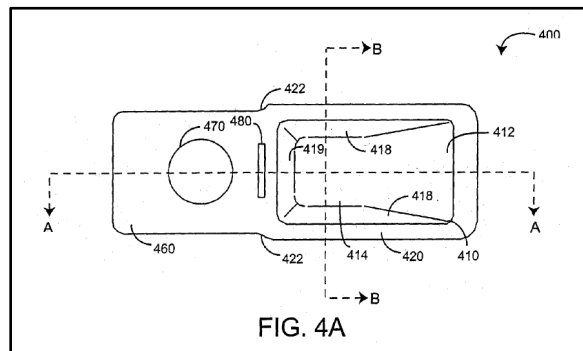
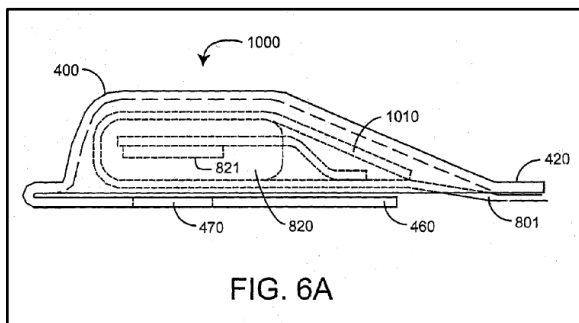
EX1004 ¶46, FIGS. 10A, 11B (excerpted); EX2002 ¶71. As shown above (right), the fixed shield (1005, red) has four square holes such that four corresponding square areas of the underlying detector/photodiode (820/821, blue) are visible. EX1004 ¶47, FIGS. 10-11; EX2002 ¶71; *see* Pet. 65-66.

A POSITA would have understood light did not pass through fixed shield (1005) itself because such EMI shielding is normally made of opaque material, such as copper or other metal. EX1004 ¶¶46-47, FIGS. 10-11; EX2002 ¶72. But Abdul-Hafiz shows, and a POSITA would have understood, that light passed through the four holes in the shield (1005) to the detector (820/821). EX1004 ¶47, FIG. 11B; EX2002 ¶¶72-73. Thus, a POSITA would have understood that Abdul-Hafiz's

alleged light block includes *four openings* through which light is configured to pass to the detector—not “only one” as Claims 1 and 19 require. EX2002 ¶¶72-73.

2. Apple Fails To Establish Any Reference Discloses an Opening/Window With an Area Smaller than a Detection Surface Area of the at least one Detector (Claims 1, 10)

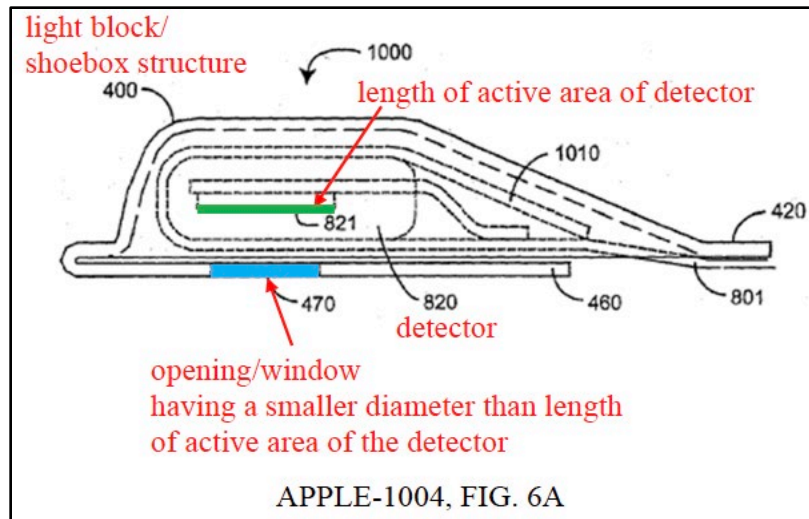
Apple relies on the aperture (470) in Abdul-Hafiz’s optical housing (400) as the alleged “opening”/“window” in its grounds. Pet. 35-43, 67-69.



EX1004, FIGS. 6A, 4A. But for several reasons, Abdul-Hafiz does not disclose that an “opening”/“window” with “an area smaller than a detection surface area of the at least one detector.”

a. Abdul-Hafiz’s Figures Do Not Disclose the Precise Dimensions or Sizes Apple Relies On

Apple argues that “Abdul-Hafiz shows figures where the aperture has a smaller diameter than the length of the active area of the detector, and thus a POSITA would have understood or found it obvious that Abdul-Hafiz’s aperture [470] (opening/window) has an area smaller than the active area of the photodiode chip 821 (detection surface area).” Pet. 50.



Id., 47 (Apple’s annotations). Apple thus relies on precise dimensions and sizes inferred from Abdul-Hafiz’s figures (primarily FIGS. 6A, 10) to argue that it discloses this element. Pet. 46-51, 69. Apple is wrong.

A POSITA would have understood that Abdul-Hafiz fails to disclose the dimensions or sizes that Apple relies on. “[I]t is well established that *patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes* if the specification is completely silent on the issue.” *Hockerson-Halberstadt, Inc. v. Avia Grp. Int’l, Inc.*, 222 F.3d 951, 956 (Fed. Cir. 2000) (*White v. H.J. Heinz Co.*, 640 F. App’x 930, 934 (Fed. Cir. 2016) (same)). Abdul-Hafiz’s figures do not disclose an opening/window with an area smaller than a detection surface area of the detector because its specification is silent on the precise dimensions and sizes that Apple relies on, as explained below.

Abdul-Hafiz does not explicitly disclose that its figures are drawn to scale. See generally EX1004; EX2002 ¶¶77. Apple does not contend otherwise. Pet. 47-

51; EX1003 ¶¶101-106. Thus, Apple’s reliance on Abdul-Hafiz’s not-to-scale figures should be rejected. *See, e.g., Nystrom v. TREX Co.*, 424 F.3d 1136, 1149 (Fed. Cir. 2005) (“[A]rguments based on drawings not explicitly made to scale in [prior art] patents are unavailing.”).

Indeed, when challenging other Masimo patents, Apple and its expert have repeatedly explained the law that “*patent figures should not be interpreted as precise and drawn to scale* unless otherwise stated.” *See, e.g., Apple Inc. v. Masimo Corp.*, IPR2020-01714, Paper 20, 19 (Oct. 29, 2021); *Apple Inc. v. Masimo Corp.*, IPR2020-01714, EX1047 ¶46 (Oct. 29, 2021) (same); *Apple Inc. v. Masimo Corp.*, IPR2020-01538, Paper 27, 18 (Aug. 31, 2021) (same); *Apple Inc. v. Masimo Corp.*, IPR2020-01538, EX1047 ¶42 (Aug. 31, 2021) (same). Thus, Apple cannot credibly rely on Abdul-Hafiz’s figures as precise or drawn to scale.

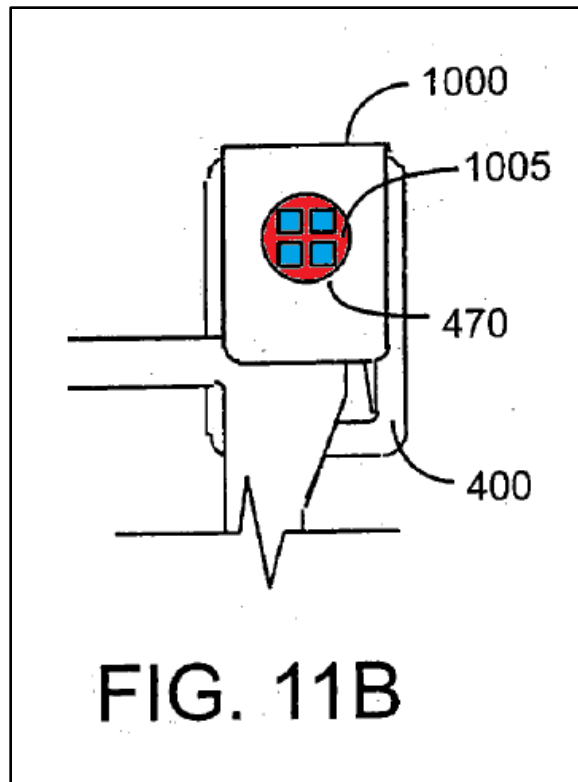
Additionally, Abdul-Hafiz’s specification never describes the dimensions of the features Apple relies on: the diameter of the aperture (470) and the length and width of the detector (820)/photodiode chip (821). EX1004 ¶¶5, 7, 33-34, 37, 39, 46; EX2002 ¶78. It also never describes the precise sizes of those components or how those component sizes compare to one another. EX1004 ¶¶5-7, 33-34, 37-39, 46; EX2002 ¶78. Therefore, Abdul-Hafiz’s figures “*do not define the precise proportions of the elements and may not be relied on to show particular sizes*” of its aperture (470) or detector (820)/photodiode chip (821) because its specification

is silent on this issue. *Hockerson-Halberstadt*, 222 F.3d at 956. Accordingly, Apple fails to show that the alleged “opening”/“window” has “an area smaller than a detection surface area of the at least one detector.” EX2002 ¶¶76-78.

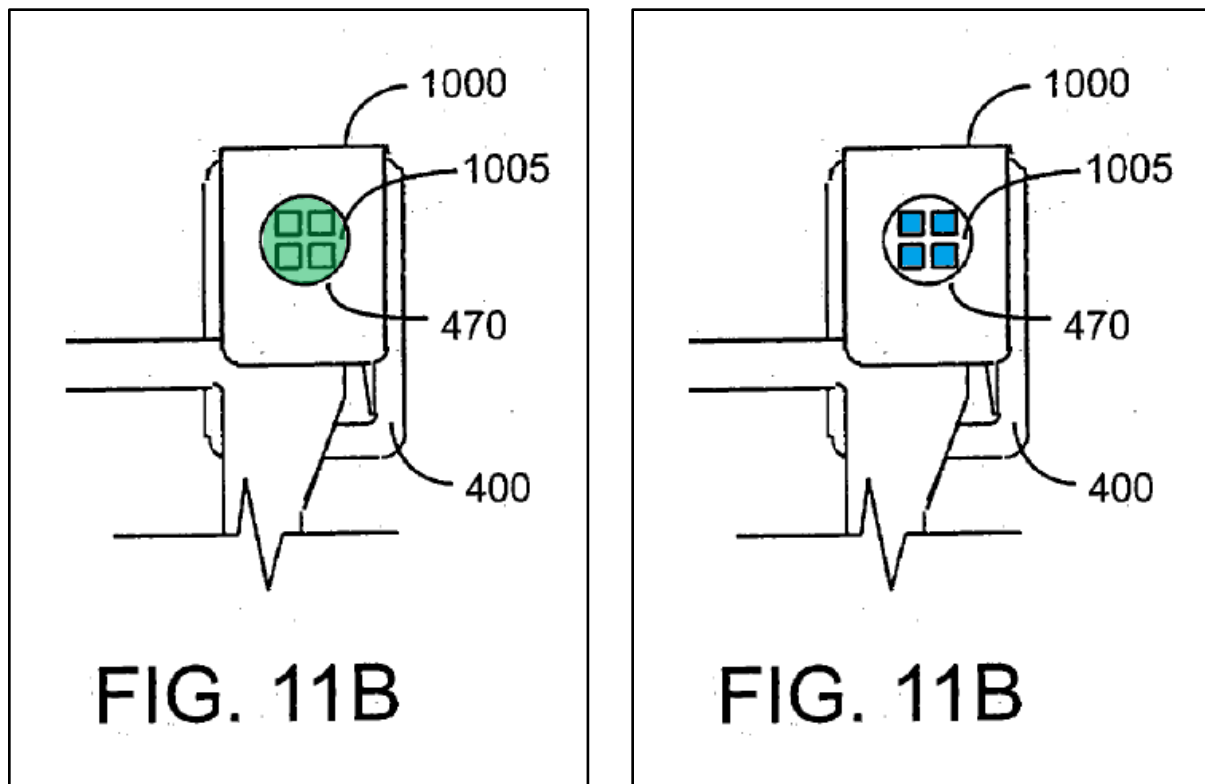
Further, Apple argues that FIG. 3 of Abdul-Hafiz “more clearly shows that the aperture 322 has a smaller length than the length of the detector 310.” Pet. 47-48. But FIG. 3 concerns a different embodiment—it does not include the aperture (470) and/or photodiode (821) of Apple’s “Abdul-Hafiz+Raley” combination. EX1003, FIG. 3. And regardless, Apple does not propose combining these different embodiments or articulate any motivation for doing so. Pet. 47-48; EX2002 ¶¶79.

b. Apple Improperly Ignores Abdul-Hafiz’s Disclosure

Only one figure of Abdul-Hafiz—FIG. 11B—shows both the area of the alleged “opening”/“window” (470) *and* the “detection surface area of the at least one detector” (821). EX1004, FIG. 11B, ¶¶46-47; EX2002 ¶¶80. But FIG. 11B shows that Abdul-Hafiz’s aperture (470) includes a fixed EMI shield (1005, red) that blocks light from reaching all but four areas of the underlying photodiode (821, blue). *Supra* §VIII.B.1. The EMI shield (1010), which includes fixed shield 1005, is directly folded over the detector (820) such that it becomes an “EMI shielded detector assembly” (1000). EX1004 ¶¶46-47; EX2002 ¶¶80.



EX1004, FIG. 11B. A POSITA would have understood that the four blue areas shown above are the detection surface area of the detector/photodiode (820/821) because the shield (1005) only permits light to reach those four areas of the detector/photodiode (820/821). EX2002 ¶¶80-81. Further, as one can simply observe, and a POSITA would have understood, the area of the “opening”/“window” alleged by Apple (green/left) (Pet. 48-50) is **larger** than the detection surface area (blue/right) disclosed by Abdul-Hafiz. EX2002 ¶82.



EX1004, FIG. 11B (excerpted); EX2002 ¶82. A POSITA also would have understood the detection surface area (blue) to be approximately the same size as the four holes in fixed shield (1005) because the fixed shield (1005) is directly applied to the detector (820). EX1004 ¶¶46-47, FIGS. 10-11; EX2002 ¶82.

Apple merely ignores that Abdul-Hafiz’s sensors include this fixed EMI shield (1005). Pet. 44-51. But that is improper and contradicts “the longstanding principle that the prior art must be considered for all its teachings, *not selectively*.” *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1332 (Fed. Cir. 2019) (affirming PTAB’s nonobviousness finding); *see, e.g., St. Jude Med., LLC v. Snyders Heart Valve LLC*, 977 F.3d 1232, 1243 (Fed. Cir. 2020) (affirming PTAB’s decision that no motivation to combine was shown where there was “no ‘adequate[]’ or

‘persua[sive]’ explanation by [petitioner] for why a relevant artisan would keep [some components] while replacing [the other component] to which it is attached.”).

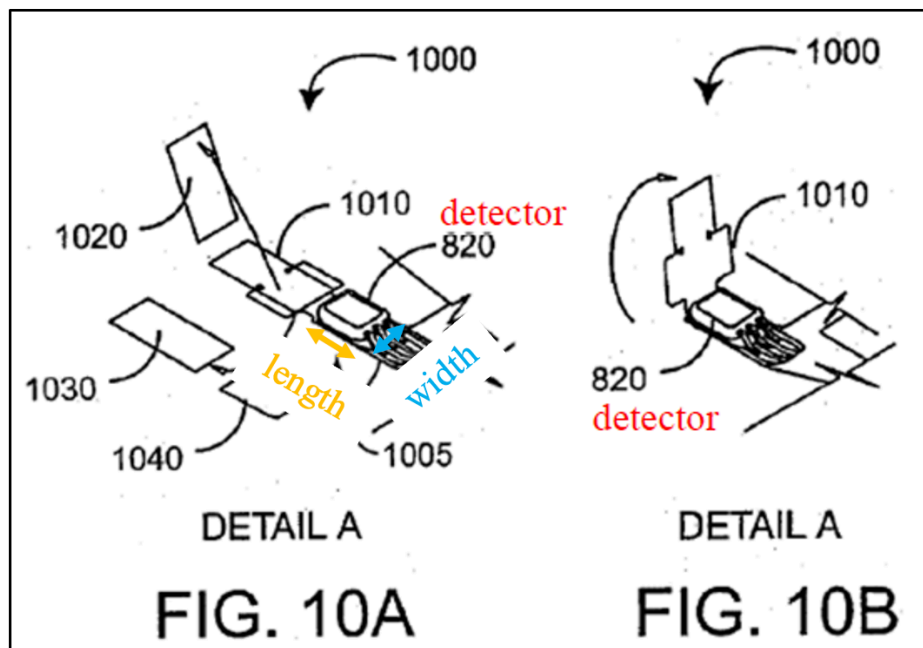
Accordingly, Abdul-Hafiz does not disclose that the “opening”/“window” alleged by Apple has “an area smaller than a detection surface area of the at least one detector.” EX2002 ¶¶80-84.

c. Apple Improperly Assumes a Detection Surface Area From Abdul-Hafiz’s Figures

Apple argues that (1) “Abdul-Hafiz shows figures [FIGS. 3, 6] where the aperture has a smaller diameter than the length of the [detection surface area] of the detector, and thus” (2) “a POSITA would have understood or found it obvious that Abdul-Hafiz’s aperture (opening/window) has an area smaller than the active area of the photodiode chip 821 (detection surface area).” Pet. 46-50. Apple’s first argument fails because Abdul-Hafiz’s drawings do not disclose precise dimensions or sizes, as explained above. *Supra* §VIII.B.2.a.

Apple’s second argument requires reading FIGS. 10A-10B of Abdul-Hafiz imprecisely (turning non-square detector (820/821) into a square) while Apple’s first argument requires reading FIG. 6A precisely (the diameter of the aperture (470) is smaller than the width of the detection surface area (821)). Pet. 49-50. Therefore, Apple’s two arguments are materially inconsistent. EX2002 ¶86. Apple cannot have it both ways.

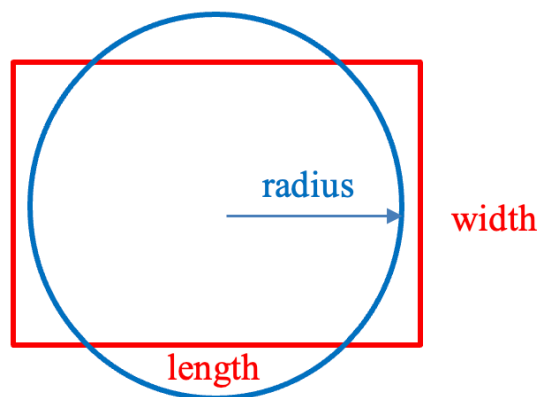
Apple’s second argument fails too. The figures Apple relies on to argue that Abdul-Hafiz’s aperture diameter is smaller than the length of the detection surface area show (i.e., FIGS. 3, 6) only one dimension of the detector (820/821)—its length. EX1004, FIGS. 3, 6; EX2002 ¶87. Because Abdul-Hafiz does not show the width of the detector (820), Apple argues the detector is “*square* or rectangular” so that Apple can assume the detector’s length and width are the same. Pet. 48-50. But Apple is incorrect. Even if Abdul-Hafiz’s drawings disclosed precise dimensions or sizes (which is incorrect), FIGS. 10A-10B shows that the detector has a *non-square rectangular shape*—not a “*square or rectangular shape*” like Apple asserts.



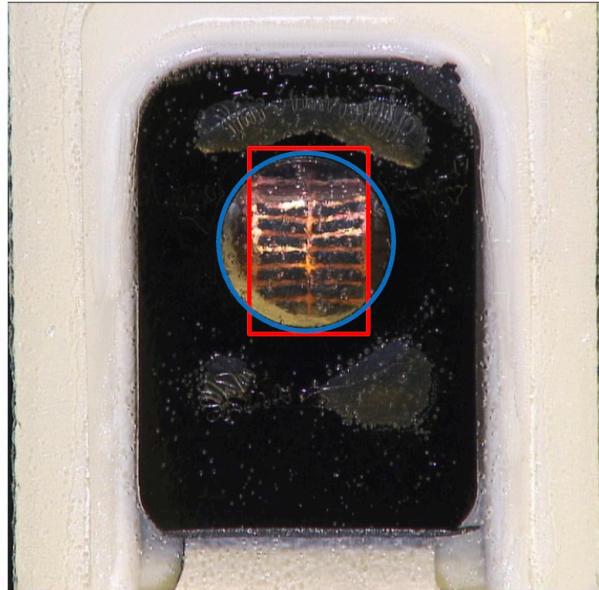
EX1004, FIGS. 10A-10B; EX2002 ¶87. Apple thus provides no basis for its assumption that the detection surface area of the detector (821) is a square. Apple’s

unexplained assertion that Abdul-Hafiz somehow discloses a square detector (820) reveals the underlying hindsight. EX2002 ¶87.

Further, if Abdul-Hafiz’s drawings disclosed precise dimensions or sizes (which is incorrect), FIGS. 10A-10B (above) show that the width of Abdul-Hafiz’s rectangular detector is noticeably smaller than the diameter of the aperture (470). EX1004, FIGS. 10A-10B; EX2002 ¶88. Thus, a POSITA would have understood that Abdul-Hafiz’s aperture area (blue,) is not necessarily smaller—and may be larger—than its detection surface area (red). EX2002 ¶88.



Id. Masimo’s depiction of Abdul-Hafiz’s aperture relative to its detector accurately represents the proportions/sizes from its figures. EX2002 ¶88. Apple’s depiction—which inexplicably has a square detector—does not. Pet. 49-50; EX2002 ¶88. Accordingly, in that case, Abdul-Hafiz’s alleged “opening”/“window” would have an area that is larger, not “smaller,” than the detection surface area. EX2002 ¶88. Indeed, the Masimo LNOP sensor covered by the Abdul-Hafiz patent has an aperture with an area ***larger than*** the detection surface area, as shown below.



EX2045; EX2002 ¶¶88.

Apple also assumes that Abdul-Hafiz’s aperture (470) has “a diameter that is equal to or smaller than each side length of [the] square or rectangle” detection surface area. Pet. 49-50. Again, Apple is wrong for at least the reasons explained above. Abdul-Hafiz does not disclose a “square” detection surface area. Apple also relies on Abdul-Hafiz’s statement (regarding FIG. 6A) that “[a] detector 820 is enclosed in the optical housing 400, 500 so that the active area 821 is *aligned with* the housing aperture 470, 670.” EX1004 ¶¶37, 39. But “aligned with” does not teach the shape of the detector/detection surface area or even suggest that the aperture (470) is smaller than the detection surface area. *Id.*; EX2002 ¶¶89. Therefore, Apple fails to show that the area of the Abdul-Hafiz’s aperture (470) is smaller than the detector surface area of its detector (820/821). EX2002 ¶¶85-89.

C. **Apple Fails to Establish that a POSITA Would Have Been Motivated to Modify Abdul-Hafiz to Have Only One Opening or a Smaller Opening/Window or Reasonably Expected Such Modifications to Succeed**

Apple fails to establish that a POSITA would have been motivated to modify Abdul-Hafiz to have a light block with “only one opening” (Claims 1, 19) or an “opening”/“window” with “an area smaller than a detection surface area of the at least one detector” (Claims 1, 10), or reasonably expected such modifications to succeed. Grounds 1A-1B fail for these reasons.

1. **Modifying Abdul-Hafiz to Have Only One Opening (Claims 1, 19)**

Abdul-Hafiz’s alleged light block does not include “only one opening,” as required by Claims 1 and 19. *Supra* §VIII.B.1. And Apple does not even argue, much less show, that a POSITA would have been motivated to modify Abdul-Hafiz to include “only one opening” or reasonably expected that modification to succeed. *See generally* Pet. 44-51. Therefore, the Petition fails to establish that Claims 1 and 19 would have been obvious to a POSITA. EX2002 ¶91.

2. **Modifying Abdul-Hafiz to Have a Smaller Opening/Window (Claims 1, 10)**

Apple relies on Abdul-Hafiz’s aperture (470) as the alleged “opening”/“window.” Pet. 41-43. Apple argues that a POSITA “would have understood or found it obvious that Abdul-Hafiz’s aperture” meets the claim

language. *Id.*, 50. But Abdul-Hafiz does not disclose that aperture (470) has “an area smaller than a detection surface area of the at least one detector.” *Supra* §VIII.B.2. And Apple does not propose modifying Abdul-Hafiz or combining it with another reference to have a smaller aperture (470). Pet. 50-51.

Apple, therefore, fails to even argue, much less show, that a POSITA would have been motivated to modify/combine Abdul-Hafiz to have a smaller “opening”/“window,” or reasonably expected any such modification/combination to succeed. Therefore, the Petition fails to establish that Claims 1 and 10 would have been obvious to a POSITA. EX2002 ¶¶92-93.

Accordingly, for the reasons in this section, the Petition fails to establish obviousness for Claims 1, 10, and 19, and thus Grounds 1A-1B fail.

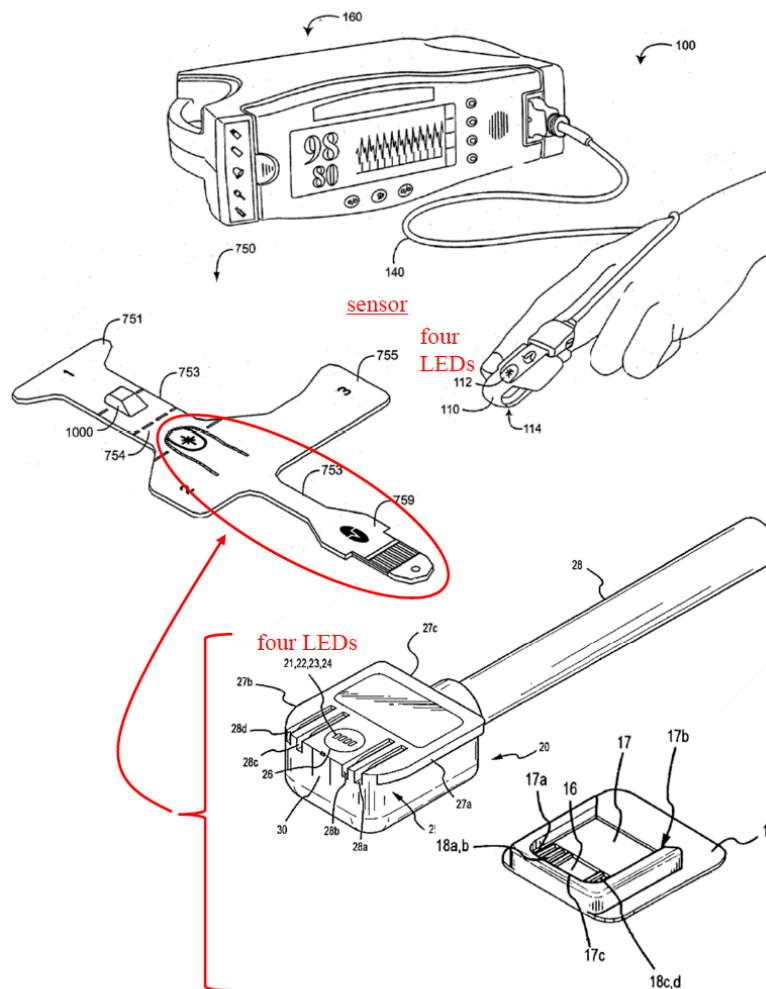
D. The Proposed Combination of Abdul-Hafiz and Raley Does Not Render Obvious Any Challenged Claim

Every independent claim requires “at least three LEDs configured to emit light of at least three different wavelengths” (Claims 1, 10) or that “at least three wavelengths of light are emitted from the at least three LEDs” (Claim 19).

Apple concedes that Abdul-Hafiz’s pulse oximeter has only two LEDs and only emits light of two wavelengths (“red and infrared”). Pet. 8, 19-20; EX1004 ¶2. Because Abdul-Hafiz lacks the claimed LEDs, Apple seeks to combine it with Raley as shown below. Pet. 14-31. Apple argues that (1) “measuring additional blood

analytes” (namely, carboxyhemoglobin and methemoglobin)⁶ or (2) “more accurately measuring oxygen saturation due to the presence of carboxyhemoglobin and methemoglobin in the blood in above normal levels” would have motivated combining Abdul-Hafiz with two of Raley’s LEDs (21-24). *Id.*

Abdul-Hafiz+Raley’s physiological monitoring device



APPLE-1004, FIGS. 1, 7C; APPLE-1005, FIGS. 3, 1 (partial)

Id., 27.

⁶ Carboxyhemoglobin and methemoglobin are the only “additional” analytes Apple relies on because they are not measured by Abdul-Hafiz’s pulse oximeter. EX2002 ¶96 n.2.

Apple’s arguments fail because (1) the prior art did not enable a POSITA to measure carboxyhemoglobin and methemoglobin by combining Abdul-Hafiz’s pulse oximeter with Raley as proposed, (2) a POSITA would not have reasonably expected success in the proposed combination of Abdul-Hafiz with Raley, and (3) a POSITA would not have been motivated to combine Abdul-Hafiz with Raley as proposed. EX2002 ¶97. Thus, Grounds 1A-1B fail for every reason in this section.

1. **The Prior Art Did Not Enable Measuring Carboxyhemoglobin and Methemoglobin By Combining Abdul-Hafiz’s Pulse Oximeter with Raley as Proposed**

The prior art must enable a POSITA to make and use *the specific disclosures being relied upon* for obviousness. *See, e.g., Raytheon Techs. Corp. v. GE Co.*, 993 F.3d 1374, 1380-81 (Fed. Cir. 2021) (the evidence “must enable the portions of [the reference’s] disclosure being relied upon” for obviousness); *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 297 (Fed. Cir. 1985) (“The test of whether a particular compound described in the prior art may have been relied upon to show that the claimed subject matter at issue would have been obvious is *whether the prior art provided an enabling disclosure with respect to the disclosed prior art compound.*”). Rebutting any presumption of prior art enablement merely requires the patent owner to come forward with evidence showing that the prior art “would not produce or would not be expected to produce the claimed subject matter.” *In re Kumar*, 418 F.3d 1361, 1368 (Fed. Cir. 2005); *see Raytheon*, 993 F.3d at 1380-81.

Apple relies on measuring carboxyhemoglobin and methemoglobin as the reason to combine two of Raley’s LEDs with Abdul-Hafiz’s two-wavelength pulse oximeter, for a total of four wavelengths and four blood analytes measured. Pet. 15-20, 25-27. By seeking to measure these additional analytes, Apple proposes making Abdul-Hafiz’s pulse oximeter into a *different device*—a pulse *CO-oximeter*. EX1011, 45; EX2002 ¶99. But a POSITA would not have expected to successfully measure these analytes by combining Abdul-Hafiz’s pulse oximeter with two more LEDs as Apple proposes.

Prior to the ’911 Patent, no one had developed a pulse oximeter that successfully also noninvasively measured methemoglobin and carboxyhemoglobin (i.e., a pulse CO-oximeter). *Masimo was the first* to make such a device—the Rad-57™ pulse CO-oximeter—which was not released or even announced until after the ’911 Patent. EX2046 (March 2005 press release announcing Rad-57™ is the “*First Device* to Noninvasively Measure Carbon Monoxide in the Blood....”); EX2047 (late-2006 study explaining “[t]he Masimo Rad-57 is *the first* commercially available pulse oximeter that can measure methemoglobin and carboxyhemoglobin.”); EX2057, 129; EX2002 ¶100. And for years after the ’911 Patent, the Rad-57™ remained the only pulse oximeter that could also measure carboxyhemoglobin and methemoglobin. *See, e.g.*, EX2047 (2006 study); EX2048 (2009 article stating that “[o]nly one prehospital device is presently capable of

measuring both CO and MET: the RAD-57™....”); EX2049, 125 (2009 study); EX2002 ¶100. Further, those of skill in the art recognized that a critical feature of the Rad-57™ was that it “*uses eight wavelengths of light* instead of the usual two and is thereby able to measure more than two species of human hemoglobin.”⁷ EX2047, 892; EX2046, 1; EX2002 ¶100. Thus, the real-world development of noninvasive monitoring confirms that at the time of the ’911 Patent, a POSITA would not have expected to successfully measure carboxyhemoglobin and methemoglobin by adding two LEDs (two more wavelengths) to Abdul-Hafiz’s two-wavelength pulse oximeter as Apple proposes. EX2002 ¶100.

Apple ignores reality and instead focuses on theory discussed in the prior art. Apple argues that combining Abdul-Hafiz’s pulse oximeter with two more LEDs (for four total wavelengths) would have made it a “standard algebra problem” to solve four equations for four “unknowns” (“four of oxygen saturation, oxyhemoglobin, deoxyhemoglobin, carboxyhemoglobin, and methemoglobin”). Pet. 57-58. But Raley, Jarman, and the other prior art Apple relies on did not enable a POSITA to successfully measure these four analytes with four wavelengths of light. *Id.* ¶101.

⁷ Like Masimo’s Rad-57™, even Apple recognizes that the ’911 Patent describes using “*“eight LEDs ... for measuring HbCO (carboxyhemoglobin) and/or METHb (methemoglobin) in addition to SpO₂ (oxygen saturation) and pulse rate.”*” Pet. 4-5 (quoting EX1001, 8:7-13, 2:28-30, 3:19-26).

Apple relies on Raley (Apple’s secondary reference) and Jarman (a tertiary reference), Pet. 15-20, 25-27, which are both Datex-Ohmeda references. *Compare* EX1005, 1 *with* EX1007, 1 *and* EX2050. Raley mentions that its probe (40) could be used with a monitor (100) that executed “data processing instructions stored in memory ... to determine an estimate of the blood analyte levels.” EX1005, 3:52-4:46; EX2002 ¶102. Raley also mentions that its FIG. 3 sensor embodiment with four emitters (21-24) theoretically “would be useful” for measuring “blood analytes such as such as oxyhemoglobin, deoxyhemoglobin, carboxyhemoglobin and methemoglobin.” EX1005, 5:63-6:2, 1:41-45. But Raley never explains how to measure those four blood analytes using LEDs of only four different wavelengths. *See generally id.*; EX2002 ¶102. And Jarman, like Raley, merely states that four LEDs of different wavelengths mathematically “could” be used to measure the concentration of four analytes—“O2Hb [oxyhemoglobin], RHb [deoxyhemoglobin], COHb [carboxyhemoglobin], and MetHb [methemoglobin].” EX1007, 3:21-27, 5:21-6:16; EX2002 ¶102.

A POSITA would not have expected to successfully measure four analytes including carboxyhemoglobin and methemoglobin using only four different wavelengths as Apple now proposes. EX2002 ¶103.

First, a POSITA would have understood that measuring these four complex analyte concentrations depends on more than four unknowns, such as the path length

of light passing through tissue. EX1007, 5:38-40; EX2051, 8:53-60; EX2052, 3:37-55; EX2002 ¶104. Raley does not address path length, and Jarman merely assumes path length (ΔL) is constant and ignores it. *See generally* EX1005; EX1007, 5:38-40; *id.*, 5:21-6:28; EX2002 ¶104. But a POSITA would have understood that path length readily changes for many reasons (e.g., variations in tissue structure, motion, etc.) and is thus another unknown variable in the measurements of blood analytes Apple proposes. EX2051, 8:53-60; EX2052, 3:37-55; EX1006, 2:64-3:4; EX2002 ¶104. Apple ignores this unknown variable in the Petition. But given the number of unknown variables in the analyte measurements Apple proposes and the fact such analytes had never been noninvasively measured successfully at that time outside Masimo, a POSITA would not have expected the Abdul-Hafiz+Raley system Apple proposes to successfully measure four analytes including carboxyhemoglobin and methemoglobin. EX2002 ¶105.

Second, a POSITA would have recognized that Datex-Ohmeda never released a device (with any number of wavelengths) that measured multiple analytes including oxygen saturation, carboxyhemoglobin, and methemoglobin. EX2002 ¶106. Therefore, a POSITA would not have expected Apple's proposed four-wavelength device based on Datex-Ohmeda patents (Raley, Jarman) to successfully measure those analytes. *Id.*

Third, the remainder of the prior art does not enable measuring carboxyhemoglobin and methemoglobin with four wavelengths as Apple proposes. Abdul-Hafiz does not even mention these analytes. *See generally* EX1004; EX2002 ¶107. Aoyagi and Kuenster both use five wavelengths. EX1010, 7:33-8:22, 8:47-51; EX1012, 4:30-38, 5:27-29, 4:5-17; EX2002 ¶107. Barthelemy has three wavelengths, does not measure methemoglobin, and was confirmed by Jarman as never being implemented in a “commercially acceptable [PPG] device.” EX1008, Figure, 6:35-49; EX1007, 2:36-41; EX2002 ¶107. Lastly, Webster (EX1011, 54-55) merely mentions his student’s project (Buinevicius), but that rudimentary “three wavelength pulse oximeter” did not calculate methemoglobin. EX2056, 3 (explaining device implemented merely “theoretical approximations and calculations”), 15; EX2002 ¶107.

Accordingly, a POSITA would not have expected to successfully measure analytes including carboxyhemoglobin and methemoglobin by combining Abdul-Hafiz’s two-wavelength pulse oximeter with LEDs of two more wavelengths from Raley as Apple proposes. EX2002 ¶¶98-108. Therefore, the prior art did not enable the combination Apple relies on, and Grounds 1A-1B fail. *Id.* And because measuring these analytes with only four wavelengths was not enabled, Apple’s insistence that a POSITA would have combined Abdul-Hafiz and Raley to achieve

these non-enabled measurements reveals the hindsight tainting Apple's analysis.

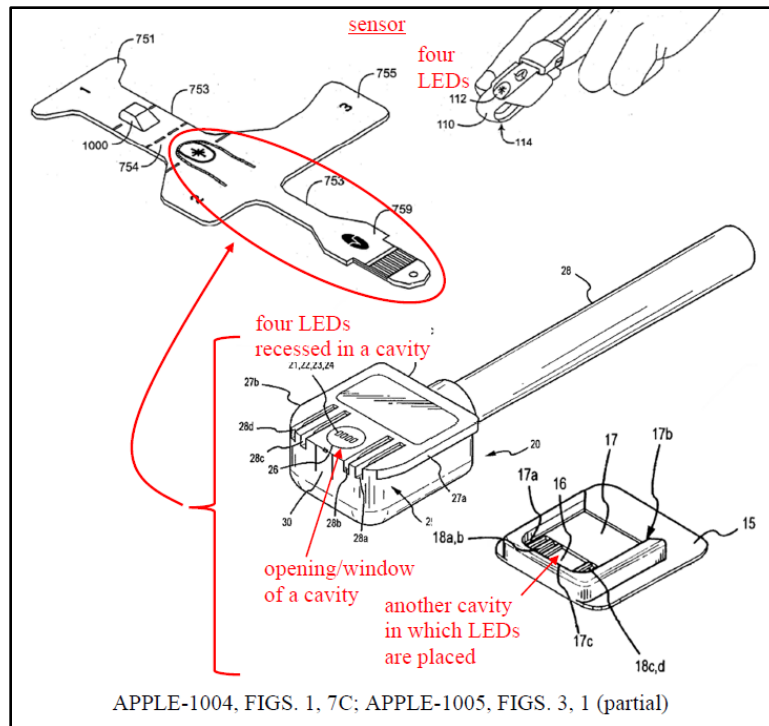
EX2002 ¶108.

2. A POSITA Would Not Have Reasonably Expected the Proposed Combination of Abdul-Hafiz with Raley's Interconnect Cable Segment/Connector to Succeed

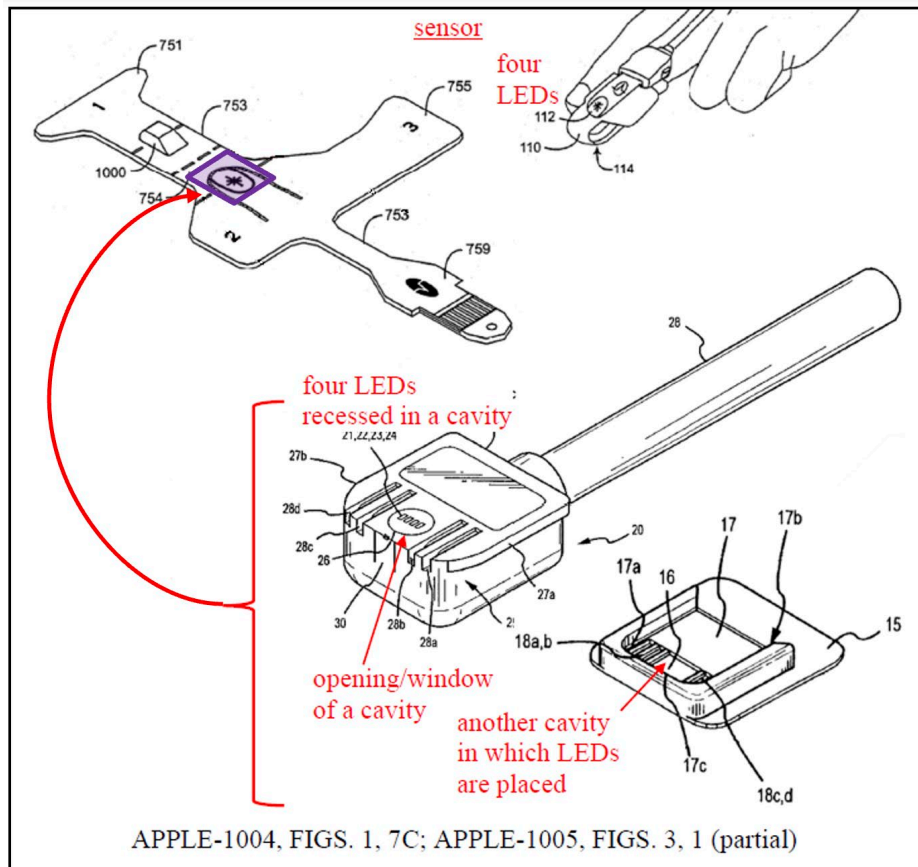
For several reasons, a POSITA would not have reasonably expected Apple's proposed combination of Abdul-Hafiz and Raley to succeed. *Id.* ¶109.

First, for at least the reasons that Apple's proposed combination is not enabled, a POSITA would not have reasonably expected to successfully measure methemoglobin and carboxyhemoglobin by combining Abdul-Hafiz with Raley as Apple proposes. *Supra* §VIII.D.1; EX2002 ¶110.

Second, a POSITA would not have reasonably expected Apple's combination to succeed because the combined structure would inject sources of inaccuracy into Abdul-Hafiz's sensor. EX2002 ¶111. Apple proposes combining Raley's cable segment (20) and connector (17) with Abdul-Hafiz, as shown below. Pet. 14-31. But Apple never identifies where the connector (17) would supposedly be added to Abdul-Hafiz. *Id.*



Pet. 27 (excerpt). Even assuming they would be combined (which they would not), a POSITA would have understood that Raley's connector (17) would be located where Abdul-Hafiz's existing LEDs are (purple, as shown below). EX2002 ¶¶111-113.



patient cable were able to move the sensor relative to the patient's tissue, that could change the amount of light that is attenuated by tissue and/or change the path length of emitted light before it is detected, thus introducing measurement error. EX2002 ¶114; EX2057, 128. Thus, a POSITA would have understood that the existing configuration of Abdul-Hafiz avoided or reduced these measurement errors. EX2002 ¶114.

Combining Raley's connector (17) and cable segment (20) with Abdul-Hafiz would eliminate this benefit. EX2002 ¶115. Raley's interconnect cable segment (20), with its LEDs (21-24), fits into Raley's connector (17). EX1005, FIGS. 1-4, 5:35-62; EX2002 ¶115. But Raley's patient cable (28) attaches ***directly to the cable segment (20) containing the LEDs (21-24)***. *Id.* Thus, in Apple's proposed combination, the patient cable and Raley's bulky interconnect cable segment (20) would be attached directly to the portion of Abdul-Hafiz's sensor holding the LEDs, thereby eliminating the force absorbing/reducing buffer previously provided by separating these components with the flexible body of Abdul-Hafiz's device. EX2002 ¶115. Apple's proposed combination would thus eliminate the force buffer of Abdul-Hafiz's flexible body. *Id.*; EX1004, FIGS. 7A-7C; EX1005, FIGS. 1-4. This would directly expose the LEDs in Apple's proposed combination to forces from the patient cable without any of the force mitigation previously provided by Abdul-Hafiz's flexible body. EX2002 ¶115; EX2057, 128. As a result, the LEDs

would be able to more easily move relative to the patient's tissue, causing the associated measurement errors discussed above. EX2002 ¶115. Apple's proposed combination would thus introduce a source of error into Abdul-Hafiz's sensor, which a POSITA would not have been motivated to do or expected to succeed. EX2002 ¶115; EX2057, 128.

Further, a POSITA would not have reasonably expected success in the proposed combination of Abdul-Hafiz and Raley because *no one*, not even Datex-Ohmeda (the company behind Raley and Jarman), successfully developed a device that could measure oxygen saturation, carboxyhemoglobin, and methemoglobin before the '911 Patent. *Supra* §VIII.D.1.

Moreover, Apple's only statements regarding the expectation of success in its proposed combination are generic and unexplained assertions, such as "a POSITA would have viewed the implementation of Abdul-Hafiz's pulse oximetry system in a manner that applied Raley's teachings as merely the predictable result ... of combining known prior art elements according to known methods, and would have expected success in enhancing Abdul-Hafiz's system in this way." Pet. 19. Apple also summarily argues that Apple's proposed combination is "merely improving/adding to Abdul-Hafiz's system" and would be a "straightforward modification for a POSITA that was already relying on ... Abdul-Hafiz." *Id.* But "mere conclusory statements" like Apple provides "cannot satisfy the petitioner's

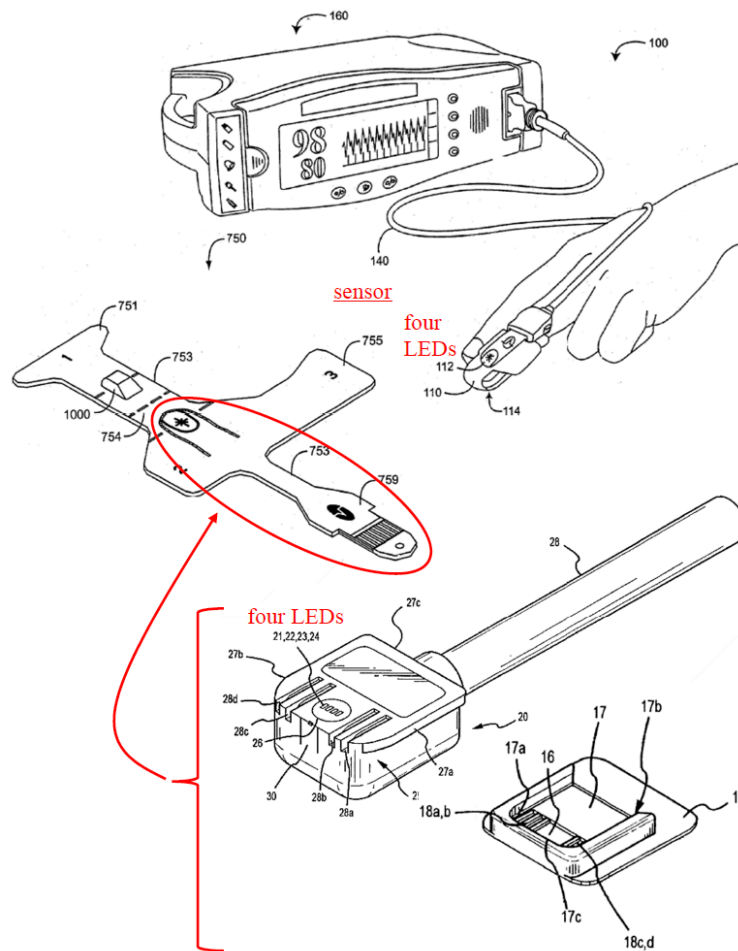
burden of demonstrating obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

3. A POSITA Would Not Have Been Motivated to Combine Abdul-Hafiz With Raley as Proposed

A POSITA would not have been motivated to combine Abdul-Hafiz with Raley as Apple proposes for at least the reasons that a POSITA would not have been able to measure or reasonably expected success in measuring carboxyhemoglobin and methemoglobin with Apple’s proposed combination. *Supra* §§VIII.D.1-2; EX2002 ¶117. A POSITA also would not have been motivated to combine Abdul-Hafiz with Raley as Apple proposes for the reasons explained below.

a. Apple Fails to Provide a Motivation to Combine Abdul-Hafiz With Raley’s Entire “Interconnect Cable Segment” and “Connector” As Proposed

Raley describes a probe (40) with an interconnect cable segment (20) containing emitters (21-24) that “may be [LEDs].” EX1005, 3:63-4:3, 2:33-37. The interconnect cable segment (20) removably attaches to a separate connector (17) that is secured to the substrate (12) worn by the user. *Id.*, 5:27-38. Because Abdul-Hafiz lacks the claimed LEDs, Apple proposes combining Abdul-Hafiz with two of Raley’s LEDs (21-24). Pet. 14-31. But, in addition to Raley’s LEDs (21-24), Apple also combines Raley’s *entire interconnect cable segment* (20) and *separate connector* (17) with Abdul-Hafiz, as shown below.

Abdul-Hafiz+Raley's physiological monitoring device

APPLE-1004, FIGS. 1, 7C; APPLE-1005, FIGS. 3, 1 (partial)

Id., 27.

Apple never articulates a motivation to also combine Abdul-Hafiz with Raley's *entire interconnect cable segment* (20) and *separate connector* (17) as it proposes. *Id.*, 14-31. Instead, Apple merely assumes these extraneous features of Raley would have been included when combining Abdul-Hafiz with two of Raley's LEDs, and argues the resulting combination meets other elements. *Id.*, 29-30 ("[I]n the Abdul-Hafiz+Raley's system, the four LEDs are recessed into a cavity."). Apple's unexplained motivation arguments reveal its hindsight analysis. *See, e.g.*,

(“***Without any explanation*** as to how or why the references would be combined to arrive at the claimed invention, ***we are left with only hindsight bias*** that *KSR* warns against”). Apple thus fails to provide, much less establish, a motivation to combine Abdul-Hafiz with Raley as it proposes. EX2002 ¶¶118-119. Grounds 1A-1B fail for this reason.

b. “Measuring Additional Blood Analytes” Contradicts Abdul-Hafiz’s Purpose And Would Not Have Motivated The Proposed Combination

Apple argues that measuring two additional blood analytes—carboxyhemoglobin and methemoglobin—would have motivated a POSITA to combine Abdul-Hafiz with Raley as proposed. Pet. 18-20, 25-27. But for multiple reasons, Apple fails to establish that measuring these additional analytes would have motivated the combination it proposes. EX2002 ¶120.

First, Apple speculates that “[a]n accurate measurement of carboxy[]hemoglobin [sic] ... ***may*** be needed when the patient is a smoker or if carbon monoxide poisoning is suspected” and “elevated methemoglobin levels in the blood ***can*** be caused by various medications, illegal drugs, and certain pathological conditions such as sickle cell anemia.” Pet. 18-20, 25-27. But Apple’s assertions that these other measurements ***may*** or ***can*** be useful do not show that a POSITA ***would have been motivated*** to combine these functionalities with Abdul-

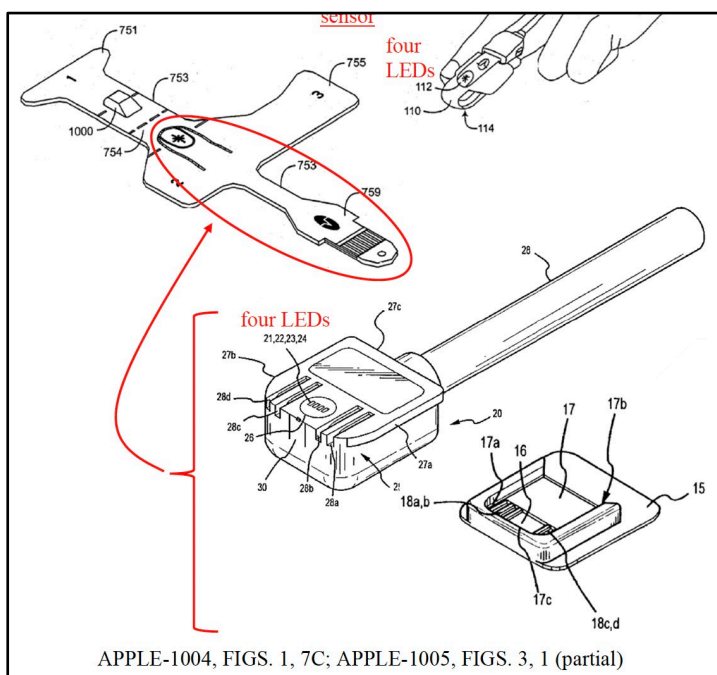
Hafiz. EX2002 ¶121; *see, e.g., Adidas AG v. Nike, Inc.*, 963 F.3d 1355, 1359 (Fed. Cir. 2020) (obviousness inquiry asks what a POSITA would have been motivated to do, not what “could” be done).

Second, Apple argues that a POSITA would have been motivated to combine Abdul-Hafiz’s pulse oximeter with two LEDs (two more wavelengths) from Raley because doing so could be “useful” in certain fringe cases (e.g., “when the patient is a smoker” or has taken “illegal drugs”) where carboxyhemoglobin or methemoglobin levels may be “elevated.” Pet. 18-20. But as explained above, a POSITA would not have expected Apple’s proposed combination to successfully measure carboxyhemoglobin and methemoglobin. *Supra* §§VIII.D.1-2. For at least those reasons, a POSITA would not have been motivated to combine Abdul-Hafiz with Raley as Apple proposes to measure elevated levels of these analytes. EX2002 ¶122.

Third, Abdul-Hafiz, like the Masimo LNOP sensor it covers, was intended to be a low-cost disposable sensor. EX1004, FIGS. 7A-7C, claim 20; EX2038. Low-cost disposable sensors were preferred by hospitals because they reduced the risk of cross-contamination between patients. EX2058; EX1005, 1:22-25; EX2002 ¶123. Another advantage was that disposable sensors like Abdul-Hafiz reduced the logistical complexity of patient care—the sensor could simply be thrown away rather than cleaned, tracked, stored, and reused. EX1005, 1:17-31, 2:64-67; EX2002 ¶123.

Abdul-Hafiz, like the Masimo LNOP sensor it covers, accurately measured oxygen saturation while keeping costs low enough to achieve the benefits of a disposable sensor. EX2002 ¶123.

Apple’s proposed combination (below-right) would frustrate this purpose of Abdul-Hafiz. Apple’s proposal to combine Abdul-Hafiz with two of Raley’s LEDs, the entire “interconnect cable segment” (20) housing those LEDs and its connector (17), as well as “two more sets of circuits and [processing] instructions” (Pet. 14-20) would have increased the cost and complexity of Abdul-Hafiz’s sensor. EX2002 ¶124. Abdul-Hafiz’s design avoided such needless cost and complexity by including the LEDs inside the flexible fabric of the sensor. EX1004, FIGS. 1, 7; EX2002



¶124. Further, including the LEDs in a separate, bulky, reusable component (cable segment (20)) as Apple proposes would require part of the resulting device to be inspected and cleaned between patients, eliminating the utility of Abdul-Hafiz being a fully disposable sensor. *Id.* Thus, a POSITA would not have been motivated to combine Abdul-Hafiz with Raley as proposed. EX2002 ¶¶120-124; *Henny Penny*,

938 F.3d at 1332 (affirming PTAB’s finding of no motivation to combine where combination “would introduce ‘additional plumbing and complexity’ and lead to ‘decreased efficiency.’”).

c. **“More Accurately Measuring Oxygen Saturation”
Would Not Have Motivated The Proposed
Combination**

Apple argues that “compensat[ing] for errors in the measurement of oxygen saturation due to the presence of carboxyhemoglobin and methemoglobin” would have motivated a POSITA to combine Abdul-Hafiz and Raley. Pet. 18. But for numerous reasons, Apple is incorrect. EX2002 ¶125.

First, a POSITA would not have been motivated to combine Abdul-Hafiz with Raley to somehow compensate for carboxyhemoglobin and methemoglobin levels because a POSITA would not have expected Apple’s proposed combination to successfully measure either of these analytes. *Supra* §§VIII.D.1-2.

Second, a POSITA would have known that measuring carboxyhemoglobin and methemoglobin could not be used to improve the accuracy of oxygen saturation measurements because the achievable error in carboxyhemoglobin and methemoglobin measurements is *larger than* the achievable error in oxygen saturation measurements. Indeed, in the only device that could actually measure these parameters around the time of the ’911 Patent—Masimo’s Rad-57™ pulse CO-oximeter—the $\pm 3\%$ error for measuring carboxyhemoglobin (SpCO) was greater

than the $\pm 2\%$ error for measuring oxygen saturation (SpO_2). EX2059 (Rad-57™ manual); EX2060 (2013 study finding “*clearly, measurement of SpCO is less accurate than for SpO_2* ”); EX2002 ¶127. Accordingly, a POSITA would not have had the motivation Apple suggests because he or she would have known that a source of even greater error could and would not be used to improve the accuracy of oxygen saturation measurements. EX2002 ¶127.

Third, Apple assumes there was an accuracy problem with Abdul-Hafiz’s oxygen saturation measurements. Pet. 18-20. But that is incorrect. Abdul-Hafiz covers the Masimo LNOP sensor, as explained above. *Supra* §VII.A.4. And the accuracy of the Abdul-Hafiz design—Masimo’s LNOP sensors—was known among POSITAs and highly regarded in the industry. *See, e.g.*, EX2061, 3 (“Over 40 clinical studies have been published and presented in internationally respected forums documenting the significantly superior performance of Masimo SET Pulse Oximetry.”; showing Masimo SET outperformed competitors), 5 (“Masimo SET should clearly become the new standard for pulse oximetry.”); EX2038, 1-2 (“The signal integrity of Masimo LNOP sensors and the advanced signal processing of Masimo SET combine to provide accurate and reliable tracking of the patient’s true physiology, even during motion and low perfusion.”); EX2062, 1; EX2002 ¶128. Given the widely acclaimed accuracy of the Abdul-Hafiz sensor design, a POSITA

would not have been motivated to combine Abdul-Hafiz with Raley (in any way) to somehow improve accuracy. EX2002 ¶128.

Additionally, Apple’s insistence on solving an oxygen saturation accuracy problem in Abdul-Hafiz that did not exist with some type of unexplained “compensation” reveals its hindsight-based analysis. EX2002 ¶129. Apple’s generic “improve the accuracy” motivation is merely a theoretical benefit or possibility of achieving a beneficial result, which fails to show that a POSITA would have been motivated to make the specific combination that Apple relies upon. *Id.*; *see, e.g., ActiveVideo Networks, Inc. v. Verizon Commc’ns, Inc.*, 694 F.3d 1312, 1328 (Fed. Cir. 2012) (rejecting generic “build something better” motivation in affirming nonobviousness finding).

Fourth, Apple’s proposed combination is based on Raley—a Datex-Ohmeda reference. Pet. 14-31; EX1005. But a POSITA would have recognized that Datex-Ohmeda’s pulse oximeters were calibrated to be “more insensitive to changes of carboxyhemoglobin and methemoglobin concentrations in blood.” EX2063, 9; EX2002 ¶130. Given that devices like Raley were “more insensitive” to carboxyhemoglobin and methemoglobin, Apple fails to explain why a POSITA still would have been motivated to combine Abdul-Hafiz with Raley to “compensate for errors in the measurement of oxygen saturation due to [these analytes].” Pet. 14-31.

Apple’s expert’s declaration is a near-verbatim copy of Apple’s conclusory and incorrect Petition arguments, providing no independent analysis or additional explanation regarding the alleged motivation to combine. *Compare* Pet. 14-21 with EX1003 ¶¶63-71. Such testimony is “inadequate to support a finding that there would have been a motivation to combine.” *See, e.g., TQ Delta, LLC v. CISCO Sys., Inc.*, 942 F.3d 1352, 1358-63 (Fed. Cir. 2019) (conclusory and unhelpful expert testimony inadequate to support an obviousness finding; reversing Board’s obviousness finding on that basis).

For at least the reasons in this Section, a POSITA would not have been motivated to combine Abdul-Hafiz and Raley as Apple proposes, and thus Grounds 1A-1B fail. EX2002 ¶¶125-131.

E. Apple’s Failure to Inform the Board of—Much Less Address—Known Objective Indicia of Nonobviousness Warrants Denying Institution

“Objective indicia of nonobviousness must be considered in every case where present.” *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1048 (Fed. Cir. 2016). Apple violated this rule by ignoring any objective evidence of nonobviousness in its Petition. Apple knew of this evidence and its significance before filing the Petition because Masimo previously presented it in the Delaware Litigation. *See* EX2064. Despite Apple’s awareness of the relevance of this evidence and having ample time to address it, and despite Apple’s duty of candor (37 C.F.R. § 42.11(a)), Apple failed

to inform the Board of this evidence. In fact, Apple’s expert here acknowledges the importance of objective indicia to his analysis. EX1003 ¶¶32-38. But neither Apple nor its expert addressed this evidence known to Apple. *See generally* Pet.; EX1003.

Apple’s failure justifies denying institution. *See, e.g., Stryker Corp. v. KFX Medical, LLC*, IPR2019-00817, Paper 10, 28-29 (PTAB Sept. 16, 2019) (denying institution; “***We have cautioned petitioners in prior proceedings that petitions may be denied if they do not address known evidence of secondary considerations.***”; citing cases); *Robert Bosch Tool Corp. v. SD3, LLC*, IPR2016-01751, Paper 15, 23-25 (PTAB Mar. 22, 2017) (same); *Gilead Sciences, Inc. v. United States*, IPR2019-01456, Paper 17, 52-53 (PTAB Feb. 5, 2020) (“***Petitioner’s failure*** to persuasively address the [available objective indicia of nonobviousness] in its Petition ***means Petitioner falls short of its burden*** to establish a reasonable likelihood of success in prevailing on its challenge.”).

Apple’s silence here is particularly egregious because Masimo relied on evidence of objective indicia of nonobviousness within Apple’s own records. EX2064. Apple nonetheless chose not to inform the Board of any of that evidence and refuses to allow Masimo to even present much of it in this response.

Indeed, rather than address the known objective indicia, Apple has repeatedly attempted to conceal it from the Board. Masimo asked the District Court to modify the Protective Order to allow Masimo to use such evidence in this proceeding.

EX2064, 1-3. Apple opposed, arguing that Masimo should directly obtain the evidence via discovery in this proceeding. *Id.* On March 20, 2024, the District Court denied Masimo’s motion but ordered the parties to “work together in good faith” regarding the evidence usable here. EX2065. The parties conferred on March 26, but Apple maintained its refusal to make such evidence available here. EX2066. Apple employed substantially the same tactics to conceal objective evidence of nonobviousness in IPR petitions on other Masimo patents (many of which were denied institution). EX2069-EX2074. Apple also hid the inconsistency between its Petition and District court claim construction positions by not providing the Board with any of the relevant district court filings. *Supra* §V. Accordingly, Apple concealing objective evidence of nonobviousness is particularly concerning because it evidences the pattern of Apple hiding relevant information from the Board.

As a result of Apple’s tactics, Masimo can only identify certain publicly available objective indicia of nonobviousness. As discussed below, however, even that evidence, none of which Apple addressed, supports the challenged claims’ patentability, and thus each Petition ground fails.

Masimo presented evidence in the Delaware Litigation that the Apple Watch Series 6, 7, 8, 9, Ultra, and Ultra 2 accused of infringing the ’911 Patent have been commercially successful. EX2064. These Apple Watches, the first of which (Series 6) was released in September 2020, are the only Watches with the accused “blood-

oxygen” measurement feature and enjoyed increased sales compared to generations without this claimed feature. *Id.*

The Watches’ commercial success bears a nexus to the ’911 Patent claims because it is significantly attributable to the Watches’ accused blood-oxygen feature. Apple marketed—and the market understood—the blood-oxygen feature as the key differentiating feature over the prior Apple Watch generation (Series 5). EX2075; EX2076; EX2077, 1:16-5:05; EX2078, 1:28-2:06. Apple’s highlighting of the Watches’ accused feature in its marketing demonstrates the nexus between their commercial success and the challenged claims. *See, e.g., Apple*, 839 F.3d at 1055-56 (selecting claimed feature for emphasis in commercial provides evidence of nexus). Indeed, the nexus between the accused Apple Watches’ success and ’911 Patent claims is presumed because such products embody the claims. EX2002 ¶¶132-133. Accordingly, the accused Apple Watches’ commercial success supports that the devices and methods recited in the challenged claims would not have been obvious to a POSITA many years earlier in 2005. *Id.*

IX. RESERVATION OF RIGHTS

Should the Board decide to institute IPR, Masimo reserves all rights to make additional or alternative patentability arguments in, and present additional evidence with, its Patent Owner Response. Masimo’s silence on any claim or element herein is not a concession that the Petition’s discussion of the same is correct. Nothing in

this Preliminary Response is an admission, acquiescence, or estoppel on the merits of the Petition.

X. CONCLUSION

For the reasons discussed above, the Petition is deficient and Masimo respectfully requests that the Board deny institution.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: March 28, 2024

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CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), Counsel for Patent Owner Masimo Corporation hereby certifies that this document complies with the type-volume limitation of 37 C.F.R. § 42.24(b). According to Microsoft Office Word 2010's word count, this document contains approximately 13,937 words, including any statement of material facts to be admitted or denied in support, and excluding the table of contents, table of authorities, mandatory notices under § 42.8, exhibit list, certificate of service or word count, or appendix of exhibits or claim listing.

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: March 28, 2024

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CERTIFICATE OF SERVICE

I hereby certify that, pursuant to 37 C.F.R. § 42.6(e) and with the agreement of counsel for Apple, a true and correct copy of the foregoing **PATENT OWNER PRELIMINARY RESPONSE AND EXHIBITS 2001-2078** are being served electronically on March 28, 2024, to the e-mail addresses shown below:

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